

AGENDA
Cascade Charter Township Planning Commission
Monday, March 4, 2019
7:00 pm
Cascade Library Wisner Center
2870 Jacksmith Ave. SE

- ARTICLE 1. Call the meeting to order
Record the attendance**
- ARTICLE 2. Pledge of Allegiance to the flag**
- ARTICLE 3. Approve the current Agenda**
- ARTICLE 4. Approve the Minutes of the February 18, 2019 meeting**
- ARTICLE 5. Acknowledge visitors and those wishing to speak to non-agenda items.
(Comments are limited to five minutes per speaker.)**
- ARTICLE 6. Case # 18-3471 Watermark Property LLC
Public Hearing
Property Address: 1611 Galbraith Ave SE
Requested Action: The Applicant is requesting a Preliminary Plan Approval for an amendment to the PUD for additional office space and new swim center building.**
- ARTICLE 7. Case # 18-3489 Lanterns
Public Hearing
Property Address: 3217 Thornapple River Drive
Requested Action: The Applicant is requesting a Preliminary Plan Approval to rezone the property to PUD to accommodate a 21 unit single family detached condominium project.**
- ARTICLE 8. Case # 17-3392 Freedom Reins Farm
Property Address: 8613 52nd St.
Requested Action: The Applicant is requesting a Tentative Preliminary Approval to develop a 12 unit detached single-family site condominium project.**
- ARTICLE 9. Any other business**
- ARTICLE 10. Adjournment**

Meeting format

- | | |
|---|---|
| 1. Staff Presentation | <i>Staff report and recommendation</i> |
| 2. Project presentation- | <i>Applicant presentation and explanation of project</i> |
| a. PUBLIC HEARINGS | |
| i. Open Public Hearing. | <i>Comments are limited to five minutes per speaker; exception may be granted by the chair for representative speakers and applicants</i> |
| ii. Close public hearing | |
| 3. Commission discussion – May ask for clarification from applicant, staff or public | |
| 4. Commission decision - Options | |
| a. Table the decision | <i>d. Approve with conditions</i> |
| b. Deny | <i>e. Recommendation to Township Board</i> |
| c. Approve | |

MINUTES
Cascade Charter Township
Planning Commission
Monday, February 18, 2019
7:00 P.M.

ARTICLE 1. Chairman Sperla called the meeting to order at 7:00 P.M.
Members Present: Lewis, Johnson, Katsma, Noordyke, Pennington, Rissi, Kreiter, Moxley, and Sperla
Members Absent: None
Others Present: Community Development Director Steve Peterson and those listed on the sign in sheet.

ARTICLE 2. Pledge of Allegiance.

ARTICLE 3. Approve the current Agenda.

Motion was made by Member Rissi to approve the Agenda. Supported by Member Lewis. Motion carried 9 to 0.

ARTICLE 4. Approve the Minutes of the February 4th, 2019 meeting.

Motion was made by Member Johnson to approve the minutes of February 4th, 2019 (with noted corrections). Supported by Member Rissi. Motion carried 9 to 0.

ARTICLE 5. Acknowledge visitors and those wishing to speak to non-agenda items.

None wish to speak.

ARTICLE 6. Case #19:3516 Glenwood Development Partners, LLC

Property Address: 5526 Glenwood Hills Parkway SE

Requested Action: The Applicant is requesting a Basic Plan Review for an amendment to the PUD to accommodate a new 136,000 sq ft office building.

Director Peterson starts by showing an aerial photo of the property, stating that the property has been in a P.U.D. since the mid-nineties, which is why the amendment is being applied for. The proposed office building would be four stories tall. The original approved site plan (approved in the early 2000's) had a larger building that was approximately 190,000 sq ft with a proposed walkway from the "Blue Cross Blue Shield" building to the property. This project was never completed.

Part of that amendment included the vacation of a portion of Glenwood Hills, a process that was also approved but never completed in the mid-nineties. This process was in front of the Board last week, and the Board did pass a resolution for the vacation process to begin. Other property owners along that portion of the road have been notified that a portion of the road will disappear, it will then become a private street to allow access, and also become part of maneuvering and parking aisles for the new building.

Director Peterson states that the proposed height of the building is up to 58 ft tall to the roof line. The original PUD had a 3 story, 50 ft height limit, and was then changed to 3 stories with no height limit in the mid 2000's. The underlying zoning of this area is industrial with a 45ft height limit. Director Peterson advised the Applicant he would use the original PUD with a 50ft height limit for guidance.

Director Peterson notes that in the past, properties adjacent to the highway have been given allowance for additional height if they are lower than the expressway. He states that this site could take advantage of that. One provision is that there be some sort of community benefit, with several options being given to the Applicant to choose from.

There is a storm drain that runs through the middle of the current site that will need to be re-routed around the sides. The Drain Commission will be worked with for that.

Amongst other parking areas on the site, there is a proposed parking deck. Director Peterson states that he has asked for an elevation plan for the building, and thinks it would be important to have an elevation plan for the parking deck as well. The only parking deck Cascade Township currently has is at the airport.

Director Peterson pointed out that part of the north west corner of the site crosses over the neighboring property, so the Applicant will need to provide documentation that the neighboring property owners are aware and in agreement of this. There is also grading shown on the I96 property to the north, so the Applicant will need to show documentation from MDOT that will permit that. A normally required photometric site plan will be required as well.

This meeting is meant to be an introduction phase to the project, the next phase will be the Public Hearing which Director Peterson stated will be scheduled once the Applicant provides the aforementioned documents.

Chairman Sperla invited the Applicant to come forward with any comments.

Applicant came forward and identified himself as Jeff Edwards, with Rockford Constructions Real Estate Development Team. He stated the site plan will accommodate a large office user, and that the company is bound to a Non-Disclosure Agreement at the current time. Applicant Edwards stated that this would be a global corporation with the office hours of "9-5", and not a lot of outside visitors as they are more of a telephone based professional service. He also stated that they are in communication with the neighboring property owners in regards to documentation needed for buy/sell agreements, and that they are in the process of addressing the items Director Peterson requested.

Applicant Edwards stated that Rockford Constructions partner, Glenwood Development Partners, LLC, will maintain ownership of the property, entering into a long-term lease agreement with the building tenant.

Article 7. Any Other Business

Director Peterson was asked by Member Rissi about the progress of a proposed restaurant (Slim Chicken) next to IHOP, Director Peterson stated that those plans have been cancelled, and nothing else is being considered for that space at this time. The status of the proposed new Starbucks was also asked about, Director Peterson stated that it is still in progress as scheduled.

ARTICLE 8. Adjournment

Motion was made by Member Johnson to adjourn. Supported by Member Pennington. Motion carried 9 to 0. The meeting was adjourned at 7:35 p.m.

Respectfully submitted,
Phil Johnson, Secretary

STAFF REPORT: Case # 18-3471
REPORT DATE: February 14, 2019
PREPARED FOR: Cascade Charter Township Planning Commission
MEETING DATE: March 4, 2019
PREPARED BY: Steve Peterson, Planning Director

APPLICANT:
Steve Plakmeyer
Watermark Property LLC
5500 Cascade Rd
Cascade MI 49546

STATUS

OF APPLICANT: Developer

REQUESTED ACTION: Preliminary Plan approval for an amendment to add a new office space and new swim center building

EXISTING ZONING OF SUBJECT PARCEL: P.U.D. 15

GENERAL LOCATION: Southern terminus of Gailbraith

PARCEL SIZE: Approximately 60 acres.

EXISTING LAND USE ON THE PARCEL: Golf Course/Country Club

ADJACENT AREA LAND USES:
N – Office
S – Clubhouse
E- Golf course
W – Gas station

ZONING ON ADJOINING PARCELS:
N – Golfview PUD 2
S – Watermark PUD 15
E- Watermark PUD 15
W – Watermark PUD 15

STAFF COMMENTS:

1. The applicant is requesting Preliminary Plan approval in order to amend the existing Planned Unit Development to replace the existing swim center building with a new and expanded building. This building will also house the existing SNAP fitness facility.

2. The existing Snap fitness building will be turned into additional offices for the Watermark Staff. This is in addition to the existing office tenants that were permitted as part of the 2008 project.
3. The new swim center building will increase from 1,695 sq ft to 6,563 sqft.
4. The existing SNAP fitness building was permitted for a total of 14,000 sq ft with professional office limited to no more than 6,729 sq ft.
5. This new project would therefore increase the swim center by 4,868 sq ft and allow for about 7,000 sq ft of new office space in the existing SNAP fitness building.
6. PUD 15 was originally approved in 1997 and has gone through several amendments since.
7. I have copied the minutes from the planning commission meetings from 2009 when the SNAP fitness building was approved. As you will see there was a bit of discussion regarding the use of the building and some concern regarding the expanded use of the building for office space.
8. In summary, I would suggest that the current building was a compromise. This allowed for the SNAP fitness while limiting the office use. I believe the current request was asked and already answered during the 2009 process.
9. I have attached the Ordinance from 2010 that approved the SNAP fitness building
10. I have told the applicant that an addition or expanded swim center is not the issue but the conversion of the existing Snap Fitness for additional office space is not something I would support. I believe this is not what was originally agreed to, is against the long-term plan for Cascade Rd and was already asked for in 2009 and not approved then, which is why the building was downsized.
11. The applicant has now indicated that the expanded office space in the SNAP fitness building would be limited for Watermark offices only. Although this is a change from what was presented when this case was first introduced in 2018 it does appear that this was also discussed in 2009 and is one of the reasons the building was downsized. Even the limited use by Watermark staff only would be almost impossible to enforce and would lead to future change request to open the use for general offices.
12. The plan also includes a couple of minor modification to address the swim center addition. They would need to change the setbacks on the east and north side of the building.
13. Parking for the site has been provided that shows they can accommodate the expanded uses.
14. They have not yet provided any elevation plans for the new swim center buidlig.

A. Standards

Section 16.03 of the Zoning Ordinance requires that a Planned Unit Development must demonstrate that:

Standard	Staff Comment
Granting of the Planned Unit Development rezoning will result in a recognizable and substantial benefit to the ultimate users of the project and to the community, where such benefit would otherwise be unfeasible or unlikely to be achieved.	The property is already zoned PUD. The additional office space portion of the amendments was not something that staff supported in 2009 and was a reason the building was downsized with limited office use as a compromise.
In relation to underlying zoning, the proposed type and density of use shall not result in a material increase in the need for public services, facilities and utilities, and shall not place a material burden upon the subject or surrounding land or property owners and occupants or the natural environment	Staff does not feel that the additional office use is not consistent with the compromise that was reached in 2009 nor consistent with the overall plan for the area.
The proposed development shall be compatible with the General Development Plan of the Township, and shall be consistent with the intent and spirit of this Chapter	The project with a new office building is not consistent with the master plan
In relation to underlying zoning, the proposed development shall not result in an unreasonable negative economic impact upon surrounding properties	The increase in swim center should not result in an unreasonable negative economic impact. However, the expansion of the office space, given that it is already a compromise to have the limited office use in the building could over time have negative impacts upon surrounding properties
The proposed development shall contain at least as much green area and usable open space as would otherwise be required by this Ordinance with respect to the most dominant use in the development	met.
The proposed development shall be under single ownership or control such that there is a single person or entity having responsibility for completing the project in conformity with this Ordinance. This provision shall not prohibit a transfer of ownership or control, upon due	met

notice to the Planning Director of the Township	
--	--

Staff would recommend that the proposal to amend the PUD as presented by Denied.



February 27, 2019
Project No. 170168

Mr. Steve Peterson
Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546-7192

Re: Watermark Pool Building
Site Plan Review

Dear Steve:

We have reviewed the site plan for the Watermark Pool Building, prepared by Nederveld. The current site plan and basis of this review are dated January 18, 2019. The proposed project is the demolition of the existing pool building and construction of a new 6,563 square-foot building in the same location. The site is located in the Thornapple River watershed, sub-drainage district Schoolhouse Creek.

Stormwater and Drainage

Flood Control

The Cascade Charter Township Storm Water Ordinance (SWO), Section 1.04, states the Ordinance shall apply to all development that requires any permit for work which will alter the stormwater drainage characteristics of the development site. The site is located in Stormwater Management Zone A, which requires retention of the 100-year storm event and infiltration to the greatest extent possible. Where soil conditions or other factors do not allow for adequate infiltration, the SWO requires detention of the 25-year storm event with a controlled release and a direct connection for stormwater runoff for the 100-year storm event, or detention of the 100-year storm event. The SWO also requires the first 0.5-inch of stormwater runoff be detained and released over a 24-hour period (Water Quality Control) and the 2-year storm event release rate be limited to 0.05 cfs/acre (Bank Erosion Control).

The proposed stormwater management design is to collect and infiltrate stormwater runoff from the new building and adjacent paved areas. Stormwater runoff from the site will be collected by a series of catch basins and conveyed by storm pipe to a new underground infiltration basin located on the south side of the new building. Roof drains will connect directly into the storm sewer system. The underground infiltration basin is sized for the 100-year storm event.

The applicant provided the results of a geotechnical investigation including soil borings and infiltration tests. The soil borings indicated the presence of sand to a minimum depth of 10 feet below the bottom of the underground infiltration basin. Two double-ring infiltrometer tests were also performed at the infiltration basin location, 5 feet below existing grade. Infiltration rates were 13.2 and 4.2 inches/hour. The existing soils are favorable for stormwater infiltration. The infiltration basin was sized using an infiltration rate of one-half the average of the two test results, 8.7 inches/hour. The proposed stormwater management design is in accordance with the SWO.

Water Quality Control and Bank Erosion Control

The SWO requires the first 0.5 inch of stormwater runoff be detained and infiltrated where conditions permit, or released over a 24-hour period, and the 2-year storm event release rate be limited to 0.05 cfs/acre. The proposed stormwater management design will infiltrate all stormwater runoff up to the 100-year storm event. The proposed design is in accordance with the SWO.

Z:\2017\170168\WORK\CORR\LT_PETERSON_WATERMARK_2019_0227.DOCX

1515 Arboretum Drive, SE
Grand Rapids, Michigan 49546

616.575.3824
www.ftch.com

Fishbeck, Thompson, Carr & Huber, Inc.
engineers | scientists | architects | constructors



Stormwater Runoff

The applicant provided stormwater calculations to size the underground infiltration basin. All stormwater runoff from the increase in impervious area will be discharged to the basin. Therefore, the site will not see an increase in rate of stormwater leaving the site.

Drainage Plan

The applicant has submitted drawings, calculations, and additional documentation as required in the SWO Section 2.03, Drainage Plan. Please refer to the attached checklist for items and comments on each item. Please note a maintenance agreement is required before construction begins. The agreement should be submitted to the Township for review. The maintenance agreement and plan should include at a minimum cleaning of catch basin sumps and the underground infiltration basin.

Utilities

No new utility services are proposed for the new building. The new building will tie-in to the previous building's water and sanitary sewer services.

Soil Erosion and Sedimentation Control

Soil Erosion and Sedimentation Control (SESC) measures are provided on the plan drawings. The applicant has included silt fence along the limits of disturbance and silt sacks in catch basins. SESC falls under the review and approval of the Kent County Road Commission and a permit is required before construction can begin. The SESC measures indicated on the drawings appear appropriate given the expected work.

Summary

The proposed stormwater management design meets the Township SWO requirements for new developments. The applicant will need to apply for and obtain an SESC permit prior to construction. We recommend approval of the site plan from an engineering standpoint. If you have any questions or require additional information, please contact me at 616.464.3786 or nrtorrey@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, appearing to read "N. Torrey", is positioned above the printed name.

Nathan R. Torrey, PE

jlk

Attachment

By email

cc: Michael L. Berrevoets, PE – FTCH

Cascade Charter Township

Storm Water Ordinance, Ordinance 7 of 2002, as amended by Ordinance No. 2 of 2008, May 14, 2008

Reviewing Engineer Comments are Italicized

OK - Received and Acceptable

NA - Not Applicable

NR - Not Received, Needs Follow-up, See Comments

Watermark Pool Building

Drainage Plan Checklist

- OK (1) Location of the development site and water bodies that will receive stormwater runoff
Stormwater runoff from the site discharges to an underground infiltration basin.

- OK (2) Existing and proposed topography of the development site, including the alignment and boundary of the natural drainage courses, with contours having a maximum interval of one foot (using USGS datum). The information shall be superimposed on the pertinent Kent County soil map.
Existing and proposed contours are indicated on the site drawing. Soil map information is not required for this project.

- OK (3) Development tributary area to each point of discharge from the development
Stormwater calculations were provided.

- OK (4) Calculations for the final peak discharge rates
Stormwater calculations were provided.

- OK (5) Calculations for any facility or structure size and configuration
Stormwater calculations were provided.

- OK (6) Drawing showing all proposed storm water runoff facilities with existing and final grades
The applicant provided a utility plan showing all proposed stormwater runoff facilities.

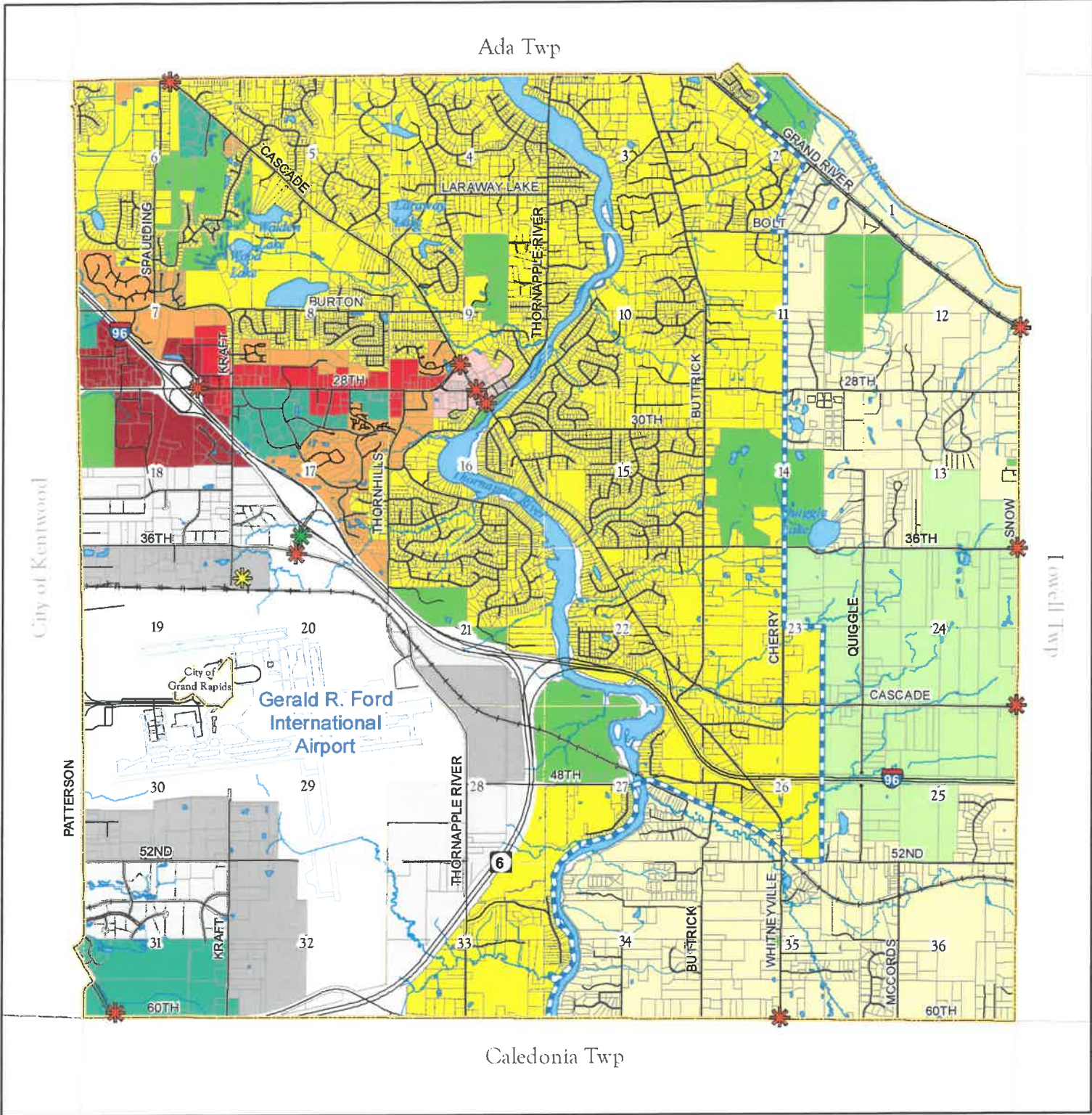
- NA (7) The sizes and locations of upstream and downstream culverts serving the major drainage routes flowing into and out of the development site. Any significant offsite and onsite drainage outlet restrictions other than culverts should be noted on the drainage map.
There are no culverts or significant offsite flows indicated on the site plan.

- OK (8) An implementation plan for construction and inspection of all stormwater runoff facilities necessary to the overall drainage plan, including a schedule of the estimated dates of completing construction of the stormwater runoff facilities shown on the plan and an identification of the proposed inspection procedures to ensure the stormwater runoff facilities are constructed in accordance with the approved drainage plan.



- OK (9) Plan to ensure the effective control of construction site stormwater runoff and sediment track-out onto roadways
Soil Erosion and Sedimentation Control (SESC) measures are included on the site plan. SESC falls under the review and approval of the KCRC, and a permit is needed before construction can begin. The SESC measures shown on the plan appear appropriate given the expected work.
- OK (10) Drawings, profiles, and specifications for the construction of the stormwater runoff facilities reasonably necessary to ensure stormwater runoff will be drained, stored, or otherwise controlled in accordance with this ordinance
The site plan includes sufficient detail to ensure compliance with the stormwater ordinance.
- NR (11) Maintenance agreement, in form and substance acceptable to the Township, for ensuring maintenance of any privately owned stormwater runoff facilities. The maintenance agreement shall include the developer's written commitment to provide routine, emergency, and long-term maintenance of the facilities and, in the event the facilities are not maintained in accordance with the approved drainage plan, the agreement shall authorize the Township to maintain any onsite stormwater runoff facility as reasonably necessary, at the developer's expense
Maintenance agreement was not provided and is required.
- OK (12) Name of the engineering firm and the registered professional engineer who designed the drainage plan and will inspect final construction of the stormwater runoff facilities
- NA (13) All design information must be compatible for conversion to Grand Valley Regional Geographic Information System (REGIS)
This is a privately owned system and will not be uploaded to REGIS.
- OK (14) Other information necessary for the Township to verify the drainage plan complies with the Township's design and performance standards for drains and stormwater management systems

Ada Twp



Caledonia Twp

Cascade Charter Township

Kent County, Michigan

Map 15 Future Land Use

Legend

- Gateway Feature
- Park 'n' Ride
- Rail Station
- Utility Service Area

- Farmland Preservation
- Rural Residential
- Suburban Residential
- Community Residential
- Village Commercial
- General Commercial
- Highway Commercial
- Mixed Use
- Heavy Industrial
- Light Industrial
- Community Facility / Golf Course



© 2004 W&W. All Rights Reserved.
 This map does not represent a legal document. It is intended to serve as an aid in graphic representation only. In no event shall the map be construed for accuracy and shall be used only through reference to the original record under copyright laws and the Uniform Access to Public Records Act, PA 442 of 1996, as amended.

Williams & Works
 Engineers • Planners • Surveyors

616.324.1100 phone • 616.324.1581 facsimile
 549 Ottawa Avenue NW • Grand Rapids, MI 49503

April 22, 2009

category. The Township hopes that the highway commercial area is served by mass transit in the future.

MIXED USE

Description and Desired Uses: The mixed use land use is intended to provide for offices, light industrial, townhome and other types of attached residential development, and retail/commercial uses. The intent is to allow for uses in a master-planned project, giving a greater potential for walkable neighborhoods. Mixed use residential areas are especially desirable where future mass transportation can serve the area.

Location: The mixed use land use category is planned for the northern portion of Centennial Park, the southern portion of Meadowbrooke and along the already developed office park on Cascade Road.

Densities: Within the mixed use category, residential densities would be 6-8 dwelling units to the acre. Density bonuses may be available for development that incorporates certain green/eco-friendly building technologies at the time of site plan review and approval. Building heights would be the lesser of 40' or 3 stories where surrounding uses and buildings are of comparable heights; however, along Cascade Road where the mixed use area is already developed, existing building heights would remain unchanged.

HEAVY INDUSTRIAL

Description and Desired Uses: This land use designation is intended to provide employment for area residents, manufacture goods and provide services to meet the needs of the larger West Michigan Region. Facilities will be developed with appropriate utility and transportation connections and in harmony with the area's natural features. Industrial uses may include warehousing, manufacturing and assembly, mini-storage, contractor's offices and yards, and shipping facilities. In the vicinity of the airport, industrial land uses should be compatible with the airport and aviation requirements. The Township supports industrial uses near the airport having direct access to the airport property to facilitate greater interconnectedness, growth of transportation-related industry, and limit off-site vehicular movement/trips. Truck traffic leaving industrial land uses will be directed efficiently to regional arterials without traversing residential areas. Landscape credits, credits for energy efficient design, or other types of credits may be offered that may reduce the current front yard setback requirements, landscaping requirements, and/or lot area requirements.

PROJECT DESCRIPTION

1611 Galbraith Avenue SE PUD Amendment

The proposed expansion to the existing Watermark Country Club pool building at 1611 Galbraith Avenue SE is minor in nature. The building is physically expanding from 1,695 square feet to 6,563 square feet, however, the impervious surface addition is only 5,687 square feet. In addition, the existing setbacks are changing as listed in the tables below. However, it is important to note that the only setbacks that abut property not included as part of the existing Watermark operation are to the north (side setback) and west (rear setback). The east and south setbacks, front and side respectively, are adjacent to other Watermark property and therefore can be considered one for zoning purposes. A parcel combination form can be submitted to the Township Assessor if the Commission desires to formalize this condition.

CURRENT SETBACKS:

Front	24.4 ft
Rear	Unchanging
North Side	44.3 ft
South Side	Unchanging

PROPOSED SETBACKS:

Front	15.0 ft (8.1 ft from entry overhang)
Rear	Unchanging
North Side	21.3 ft
South Side	Unchanging

The expansion of the building will allow the kitchen and associated seating area to increase, the restrooms and changing rooms to increase in size and the SNAP Fitness facility to move into this building (from the Watermark Office building at 1616 Galbraith Avenue SE). These requested expansions are a testament to the success of the Watermark Country Club and a confirmation of their long-term presence in Cascade Township. The details of the proposed square footages of each use within the building are included in the table below.

BUILDING DETAILS:

Kitchen	1,300 SF
Pool Locker Rooms	700 SF
Fitness (including Office and Locker Rooms)	4,563 SF

Although the minor increase of 5,687 square feet of impervious surface to the existing building only results in an increase of 2% to the total impervious surface of the golf course campus (buildings, parking, drives, etc. north of the residences), a traditional stormwater detention system was required to be created. The revised site plan reflects the proposed stormwater detention system and the submittal package includes the soil boring logs and report performed by Material Testing Consultants and also the drainage calculations prepared for the site. These documents were previously submitted directly to the Township Engineer and have been approved.

It is important to note that although the square footage of the pool building is increasing by 4,868 square feet, parking calculations for recreational sites are primarily determined by occupancy. Although an increased square footage could potentially mean a greater occupancy, the overall membership of the Country Club and pool are not increasing congruently. In addition, although the fitness facility is moving to this building from the existing office building, the square footages of the previous fitness facility to the proposed are equivalent. Additional office space for Watermark Country Club is proposed where the previous fitness facility was located. Therefore, the approved uses from the original Watermark Planned Unit Development are not changing and the current shared parking facilities will continue to exceed the necessary required.

Last, per the discussion at the Planning Commission meeting in August, it should be reiterated that the additional office space created in the existing office building with the SNAP Fitness moving to the new pool building will only be utilized for Watermark employees. The Watermark group is an overarching group that manages the Watermark Country Club and also other golf clubs throughout West Michigan, however, there it is important to clarify that no staff is dedicated to one club or another and the employees should be considered one group, whose headquarters and business operations choose to be located in this facility in Cascade Township. It is a testament to the Cascade Township community that this group wants to continue to call this location their headquarters despite their growth in acquiring properties outside of the Township.

It is clear that the Township does not want to see this area expand for additional office use, and therefore, it is critical that this expansion is clearly understood as an expansion to a current office user and not as an expansion of the overall office use by allowing additional office space and users to this area of the Township. No additional users, lease space, new tenants, etc. will be included with this expansion of the existing Watermark office space. Therefore, no new signage or any indication of change to this site will be demarcated along Cascade Road.

The approximate existing and proposed tenants, uses and areas are provided on the attached table.

Building Usage and Areas Summary

01/25/19

Existing Watermark Pool Building Information

Tenant	Use	Area (square feet)
Watermark Pool	Pool Facilities	1,695

Proposed Watermark Pool and Fitness Building Information

Tenant	Use	Area (square feet)
Snap Fitness	Fitness Center	4,563
Watermark Pool	Pool Facilities	2,000

Existing Building to the South Information

Tenant	Use	Area (square feet)
Snap Fitness	Fitness Center	4,300
Highpoint/Prop Resources	Office	1,500
Visser Dession	Office	800
Reliable Energy	Office	800
Watermark/RedWater	Office	1,500
<i>Existing Snap Fitness portion of existing southerly building will be used</i>		
<i>for Watermark office space following Snap Fitness relocation to the</i>		
<i>proposed building</i>		

Proposed Parking Summary

Proposed Watermark Pool and Fitness Building Information

Tenant	Use	Area (square feet)	Parking Ratio Req'd	Parking Spaces Req'd
Snap Fitness (capacity = 91 people)	Recreational Uses	4,563	1 space / 4 persons capacity	22.8
Watermark Pool Building & Deck Area (capacity = 500 people) ❖	Recreational Uses	25,000	1 space / 4 persons capacity	125.0

❖ Although the pool building is being modified, the capacity of the pool building and deck are still limited to 500 people

Existing Building to the South Information

Tenant	Use	Area (square feet)	Parking Ratio Req'd	Parking Spaces Req'd
Watermark Offices*	General Office	6,349	3 spaces / 1,000 sf	19.0
Highpoint/Prop Resources	General Office	2,155	3 spaces / 1,000 sf	6.5
Visser Ddesign	General Office	1,339	3 spaces / 1,000 sf	4.0
Reliable Energy	General Office	1,407	3 spaces / 1,000 sf	4.2
Watermark/RedWater	General Office	2,155	3 spaces / 1,000 sf	6.5

* Existing Snap Fitness portion of existing southerly building will be used for Watermark office space following Snap Fitness relocation to the proposed building

Existing Building to the Southeast Information

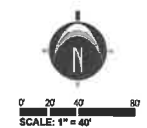
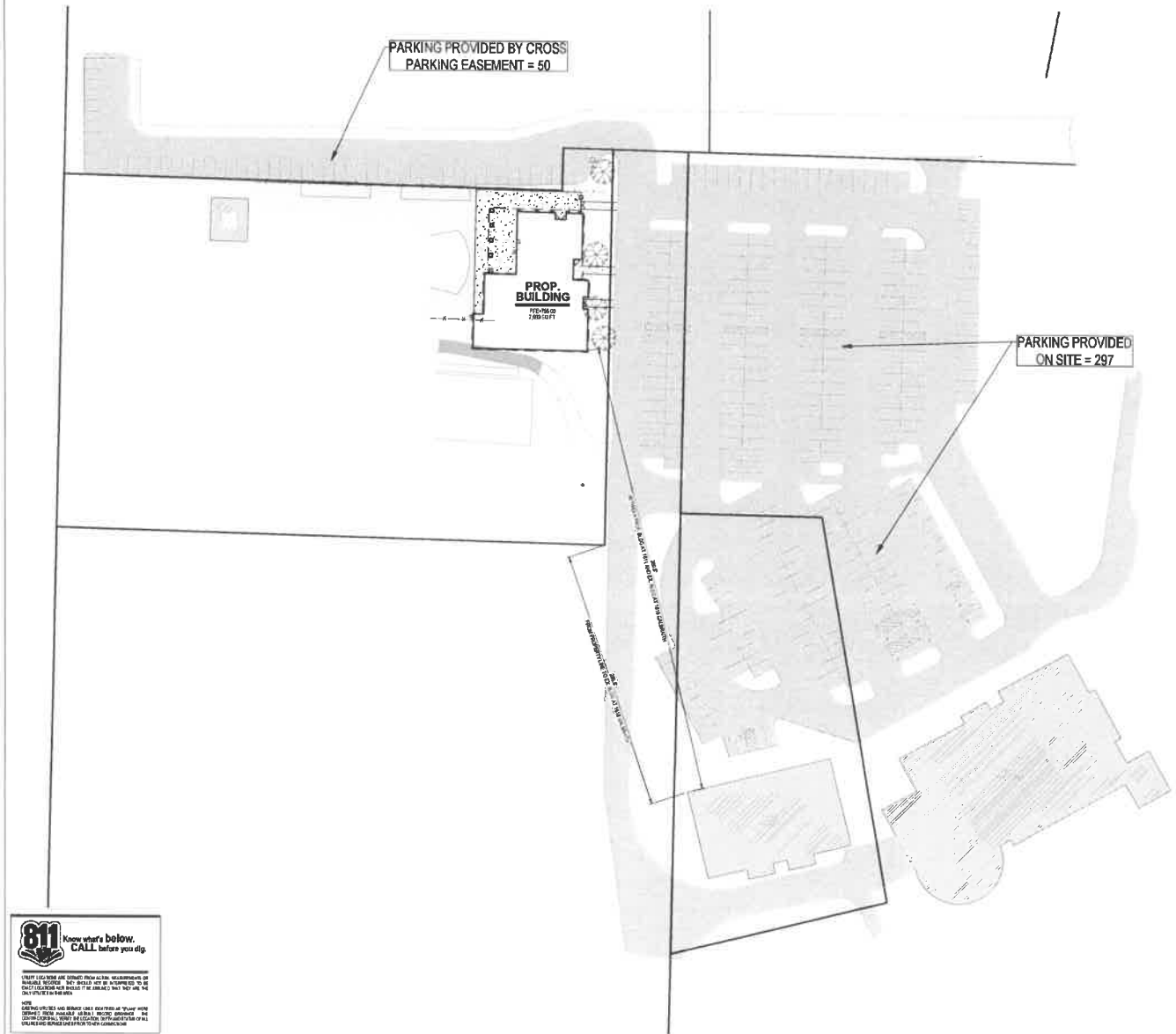
Tenant	Use	Area (square feet)	Parking Ratio Req'd	Parking Spaces Req'd
Watermark Pro Shop	Low Intensity Retail/Repair/Workshop	666	2 spaces / 1,000 sf	1.3
Watermark Restaurant	Restaurant	4,344	10 spaces / 1,000 sf	43.4
Watermark Banquet A	Restaurant	1,046	10 spaces / 1,000 sf	10.5
Watermark Banquet B	Restaurant	4,779	10 spaces / 1,000 sf	47.8
Watermark Banquet C	Restaurant	735	10 spaces / 1,000 sf	7.4

TOTAL PARKING REQUIRED	298
-------------------------------	------------

PARKING PROVIDED ON SITE	297
PARKING PROVIDED BY CROSS PARKING EASEMENT (SEE NOTE 3 BELOW)	50
TOTAL PARKING PROVIDED	347

Notes:

1. Capacity of Snap Fitness is based on International Building Code occupancy use group A-3 with a minimum of 50sf/person at maximum occupancy load.
2. Capacity of Watermark Pool & Deck Area is based on International Building Code requirements for 50sf/person for the pool deck area at maximum occupancy load.
3. A cross parking easement (Liber 5628 Page 919-928) exists for the benefit of Watermark pool for a total of 50 spaces from the property owner to the north.



NEDERVELD
 www.nederveld.com
 800.222.1616
GRAND RAPIDS
 217 Overlook Ave., Suite 302
 Grand Rapids, MI 49503
 Phone: 616.851.5940
 BIRMINGHAM
 LANSING
 CANTON
 FARGO
 INDIANAPOLIS
 PITTSBURGH

PREPARED FOR:
 Century Technology Group - Watermark
 Plakeway, Site

5555 Corporate Exchange Circle
 Grand Rapids, MI 49512
 Phone: 616.888.1100

REVISIONS:

TAKE SHEET SUBMITTAL	V Date: 02/07/19
Drawn By: Chadler, J.	S Date: 02/07/19
TAKE SHEET PLANS SUBMITTAL	V Date: 01/09/19
Drawn By: Chadler, J.	S Date: 01/09/19
TAKE SHEET PLANS SUBMITTAL	V Date: 01/02/19
Drawn By: Chadler, J.	S Date: 01/02/19
TAKE SHEET PERFORMA HAZARD	V Date: 01/02/19
Drawn By: Chadler, J.	S Date: 01/02/19
TAKE SHEET PARKING SPACES	V Date: 02/20/19
Drawn By: Chadler, J.	S Date: 02/20/19

WATERMARK POOL BUILDING
Overall Site Layout

1811 GILBERT AVENUE, SE
 PART OF THE NE 1/4 OF SECTION 7 AND PART OF THE SE 1/4 OF SECTION 6, T6N, R10W
 CITY OF GRAND RAPIDS, WEST COUNTY, MICHIGAN



PROJECT NO:
 18400396

SHEET NO:
C-206

SHEET: 1 OF 1

811 Know what's below.
CALL before you dig.

UTILITY LOCATIONS ARE SHOWN FROM PUBLIC RECORDS. UNDEGROUND UTILITIES ARE NOT SHOWN AND SHOULD BE LOCATED BY THE OPERATOR. THIS IS NOT A GUARANTEE OF ACCURACY. THE OPERATOR IS RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES BEFORE ANY CONSTRUCTION.

PROJECT DESCRIPTION

1611 Galbraith Avenue SE PUD Amendment

The proposed expansion to the existing Watermark Country Club pool building at 1611 Galbraith Avenue SE is minor in nature. The building is physically expanding from 1,695 square feet to 7,174 square feet, however, the impervious surface addition is only 5,687 square feet. In addition, the existing setbacks are changing as listed in the tables below. However, it is important to note that the only setbacks that abut property not included as part of the existing Watermark operation are to the north (side setback) and west (rear setback). The east and south setbacks, front and side respectively, are adjacent to other Watermark property and therefore can be considered one for zoning purposes. A parcel combination form can be submitted to the Township Assessor if the Commission desires to formalize this condition.

CURRENT SETBACKS:

Front	24.4 ft
Rear	Unchanging
North Side	44.3 ft
South Side	Unchanging

PROPOSED SETBACKS:

Front	15.0 ft (8.1 ft from entry overhang)
Rear	Unchanging
North Side	21.3 ft
South Side	Unchanging

The expansion of the building will allow the kitchen and associated seating area to increase, the restrooms and changing rooms to increase in size and the SNAP Fitness facility to move into this building (from the Watermark Office building at 1616 Galbraith Avenue SE). These requested expansions are a testament to the success of the Watermark Country Club and a confirmation of their long-term presence in Cascade Township. The details of the proposed square footages of each use within the building are included in the table below.

BUILDING DETAILS:

Kitchen	1,126 SF
Pool Locker Rooms	700 SF
Fitness (including Office and Locker Rooms)	5,180 SF

Although the minor increase of 5,687 square feet of impervious surface to the existing building only results in an increase of 2% to the total impervious surface of the golf course campus (buildings, parking, drives, etc. north of the residences), a traditional stormwater detention system was required to be created. The revised site plan reflects the proposed stormwater detention system and the submittal package includes the soil boring logs and report performed by Material Testing Consultants and also the drainage calculations prepared for the site. These documents were previously submitted directly to the Township Engineer and have been approved.

It is important to note that although the square footage of the pool building is increasing by 5,479 square feet, parking calculations for recreational sites are primarily determined by occupancy. Although an increased square footage could potentially mean a greater occupancy, the overall membership of the Country Club and pool are not increasing congruently. In addition, although the fitness facility is moving to this building from the existing office building, the square footages of the previous fitness facility to the proposed are equivalent. Additional office space for Watermark Country Club is proposed where the previous fitness facility was located. Therefore, the approved uses from the original Watermark Planned Unit Development are not changing and the current shared parking facilities will continue to exceed the necessary required.

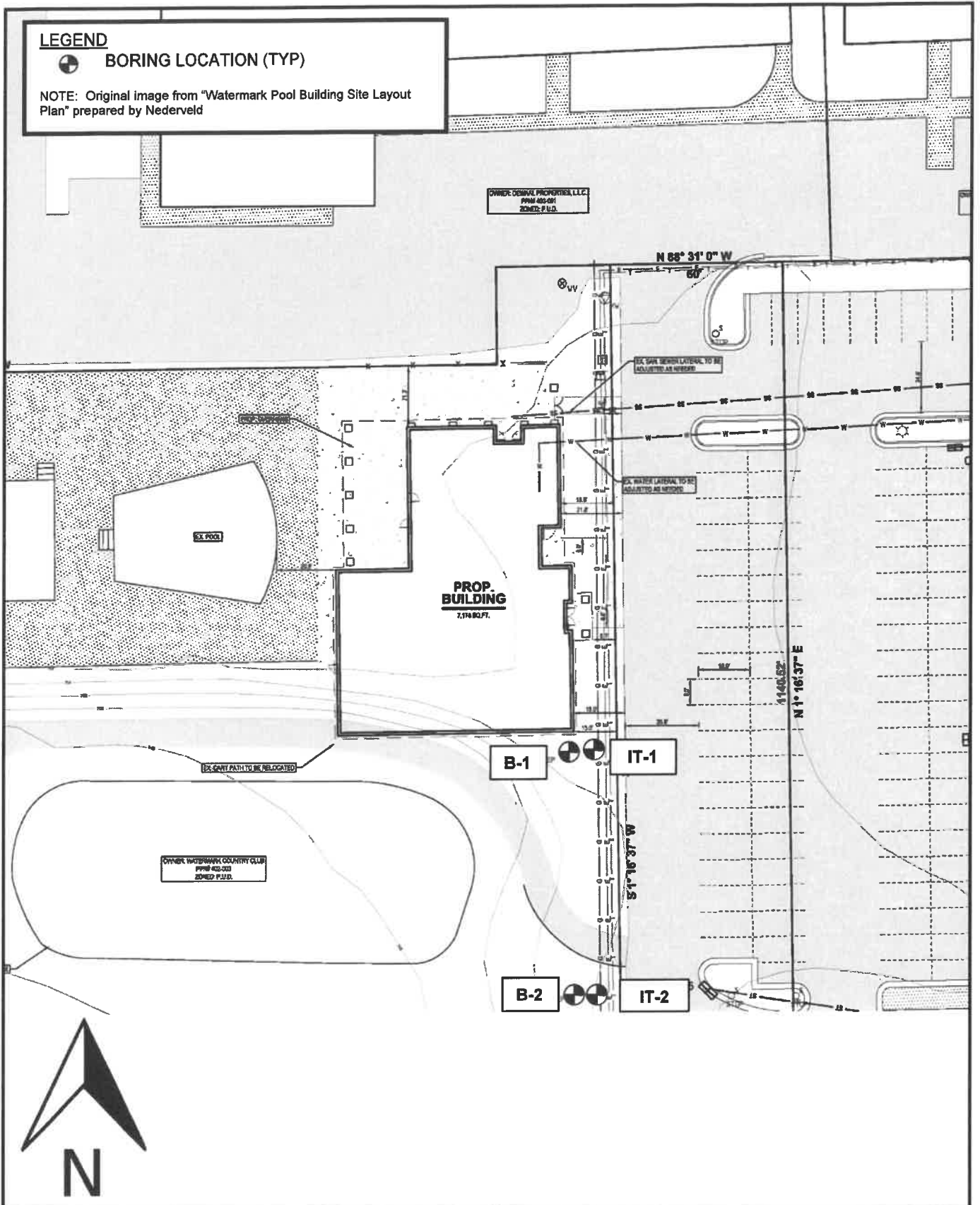
Last, per the discussion at the Planning Commission meeting in August, it should be reiterated that the additional office space created in the existing office building with the SNAP Fitness moving to the new pool building will only be utilized for Watermark employees. The Watermark group is an overarching group that manages the Watermark Country Club and also other golf clubs throughout West Michigan, however, there it is important to clarify that no staff is dedicated to one club or another and the employees should be considered one group, whose headquarters and business operations choose to be located in this facility in Cascade Township. It is a testament to the Cascade Township community that this group wants to continue to call this location their headquarters despite their growth in acquiring properties outside of the Township.

It is clear that the Township does not want to see this area expand for additional office use, and therefore, it is critical that this expansion is clearly understood as an expansion to a current office user and not as an expansion of the overall office use by allowing additional office space and users to this area of the Township. No additional users, lease space, new tenants, etc. will be included with this expansion of the existing Watermark office space. Therefore, no new signage or any indication of change to this site will be demarcated along Cascade Road.

LEGEND

 BORING LOCATION (TYP)

NOTE: Original image from "Watermark Pool Building Site Layout Plan" prepared by Nederveld



TITLE: BORING LOCATION PLAN			PROJECT: Watermark Pool Building Expansion
SCALE: NTS	DATE: 9/25/18	PROJECT NO.: 181435	Materials Testing Consultants, INC.
FIG. NO.: 1	DR. BY: CK	REV. BY: DS	



PREPARED FOR:
Carter Technology Group - Watermark
Building, Show

M&M Corporate Exchange Co. LLC
Grand Rapids, MI 49503
Phone: 616.242.1188

REVISIONS:

NO.	DATE	DESCRIPTION
1	10/14/11	1. Rev. 0001
2	10/14/11	2. Rev. 0002
3	10/14/11	3. Rev. 0003
4	10/14/11	4. Rev. 0004
5	10/14/11	5. Rev. 0005
6	10/14/11	6. Rev. 0006
7	10/14/11	7. Rev. 0007
8	10/14/11	8. Rev. 0008
9	10/14/11	9. Rev. 0009
10	10/14/11	10. Rev. 0010



EXISTING CONDITIONS

PROJECT IMPACT AREA: 13,070 S.F.
EXISTING PERVIOUS AREA: 6,324 S.F.
EXISTING IMPERVIOUS AREA: 6,746 S.F.



PROPOSED CONDITIONS

PROJECT IMPACT AREA: 13,070 S.F.
PROPOSED PERVIOUS AREA: 2,363 S.F.
PROPOSED IMPERVIOUS AREA: 10,687 S.F.
INCREASE IN IMPERVIOUS: 3,941 S.F.



WATERMARK POOL BUILDING
Impervious Exhibits
NO EXISTING IMPERVIOUS
PART OF THESE IS A SECTION AND PART OF THESE IS A SECTION, THE OTHER
CITY OF GRAND RAPIDS, WEST COUNTY, MICHIGAN



PROJECT NO:
18400396
SHEET NO:
C-900

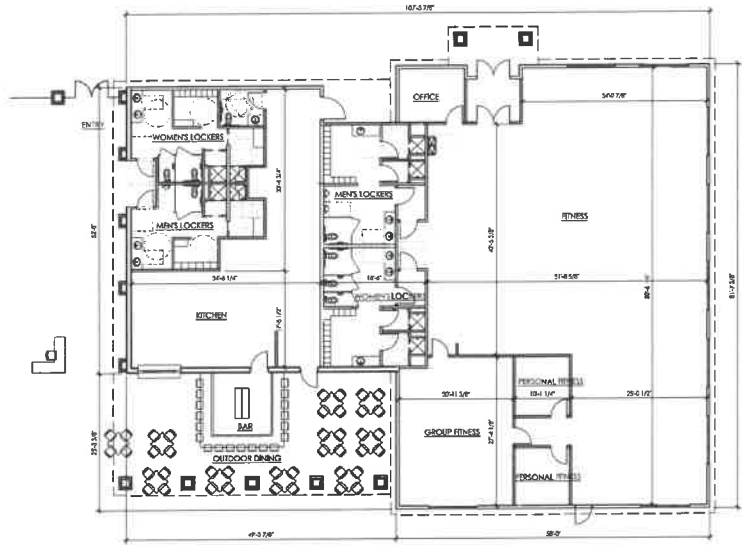


Project:	Watermark Pool Bldg
Project #:	18400396
Date:	1/16/2019

Information For Determining Infiltration Requirements

C-DEVELOPED

A. Impervious Area (C=1.00)	Length (ft)	Width (ft)	Area (s.f.)	Quantity	Total Area		
					(s.f.)	Area (Ac)	
Added impervious			3,941	1	3,941	0.09	
					0	0.00	
					0	0.00	
					0	0.00	
					0	0.00	
					0	0.00	
Total							0.09
B. Detention Area (C=1.00)		none (underground)				0.00	
C. 'Green' Area		C= 0.22					
Total site area						0.09	
Total impervious area						0.09	
Change in impervious area						0.09	
Total 'Green' area						0.00	
D. Calculate C-dev = (1.0(area1.0)+GreenAreaC(Green Area))/total area					C-dev =	1.00	



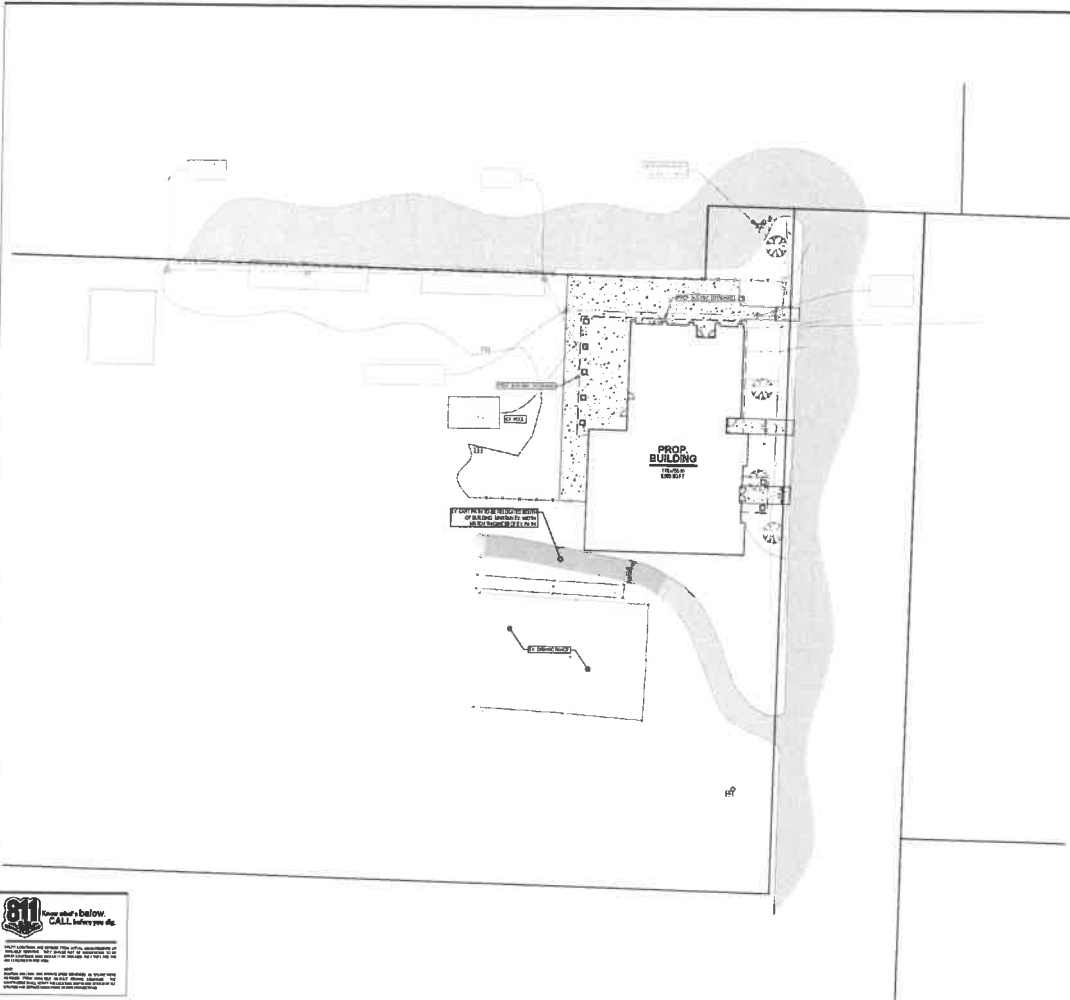
FLOOR PLAN
 1/8" = 1'-0"

Description
WATERMARK POOL
 Address
 City, Michigan

NO.	DESCRIPTION
1	Overall Floor Plan 1st Floor

OVERALL FLOOR PLAN 1ST FLOOR
 SHEET
A101
 REV. 1803-09

THIS DOCUMENT IS THE PROPERTY OF GHAFARI ASSOCIATES, LLC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF GHAFARI ASSOCIATES, LLC.



NEDERVELD
 www.nederveld.com
 800.222.0886
GRAND RAPIDS
 2100 Franklin Ave. SW
 Grand Rapids, MI 49503
 Phone: 616.455.1100

PREPARED FOR:
 Century Technology Group - Watermark
 Grand Rapids, MI

3555 Corporate Exchange Ct SE
 Grand Rapids, MI 49512
 Phone: 616.455.1100

REVISIONS:

By: J.E. VAN BUREN	Date: 07/10/2010
For: 100% Construction	By: J.E. VAN BUREN
For: 100% Construction	Date: 07/10/2010
For: 100% Construction	Date: 07/10/2010
For: 100% Construction	Date: 07/10/2010
For: 100% Construction	Date: 07/10/2010

WATERMARK POOL BUILDING
Site Layout Plan
 WITH CURBWITHRAILS
 PART OF THE SE 1/4 OF SECTION 16 AND PART OF THE SE 1/4 OF SECTION 17, T4N, R17W
 CITY OF GRAND RAPIDS, GRAND RAPIDS COUNTY, MICHIGAN



PROJECT NO:
18400396

SHEET NO:
C-205

811 *Know what's below. CALL before you dig.*

Michigan's One-Call System is a free service that allows you to locate underground utilities before you dig. Call 811 at least 48 hours before you dig. For more information, visit www.811.com.

CASCADE CHARTER TOWNSHIP
Ordinance # 11 of 2010
AN ORDINANCE TO AMEND ORDINANCE #10 OF 1997, THE
FOREST HILLS GOLF COURSE/WATERMARK CONDOMINIUMS
PLANNED UNIT DEVELOPMENT PROJECT

CASCADE CHARTER TOWNSHIP ORDAINS:

Section 1. Amendment to the Forest Hills Golf Course/Watermark Condominiums PUD Ordinance

Section VI. Development Areas shall be amended in its entirety to read as follows:

The Project consists of three different development areas as follows:

Development Area A”	Condominiums, site condominiums, and golf course.
Development Area “B”	Clubhouse, restaurant, driving range, fitness center/office building, swim center, and other associated facilities.
Development Area “C”	Office buildings along Cascade Road frontage.

These three development areas shall be governed by specific regulations contained within this PUD Ordinance as described in Section VIII in addition to the regulations found in the other Sections of this Ordinance which apply to the development in its entirety.

Section VII.E. Permitted Uses shall be amended to read as follows:

E. One combined healthclub/office building located west of the clubhouse with a maximum size of 14,000 sq ft. The building shall be consistent with the approved elevation plan approved dated 8/14/09

Section VIII.B of Specific Development Regulations shall be amended as follows
Clubhouse, Restaurant, Driving Range Healthclub/office building, Swim center and other associated facilities.

Section VIII.B.3 of the Design Guidelines, Requirements and Limitations shall read as follows:

3. The maximum size of the healthclub/professional office shall be 14,000 sq ft. as shown on the approved floor plans dated 9.3.09. This building is limited to the following uses:

1. Professional office –limited to no more than 6,729 sq ft.of the 14,000 sq ft
 - a. Examples include: attorney, engineer, accountant or other low impact type offices as determined by the Planning Commission.
2. Fitness center
3. Storage, mechanical, etc

Section VIII.B.4.c Signs shall be amended to read as follows

c. The Heathclub/office building shall be permitted 50 square feet of wall sign. In lieu of the 50 sq ft wall sign the owner can choose to install a 30 sq ft wall sign and a 20 sq ft ground sign in the location shown on the approved site plan dated 1/13/10.

d. A 12 sq ft directional sign at the south end of Galbraith is permitted in the location shown on the approved site plan dated 1/13/10.

Section 2. Effective Date

This PUD Ordinance amendment shall become effective upon publication in the Grand Rapids Press, a newspaper of general circulation within Cascade Charter Township.

Section 3. Effect

The Cascade Charter Township Zoning Ordinance, as amended, and the remainder of Ordinance #10 of 1997, except as otherwise expressly amended herein, shall remain in full force and effect.

The foregoing Ordinance amendment was offered by Board Member Goldberg, supported by Board Member Lewis. The roll call vote being as follows:

YEAS: Goldberg, Fox, Beahan, Peirce, Lewis, Koessel

NAYS: None

ABSENT: Goodyke

ORDINANCE DECLARED ADOPTED.

Ron Goodyke
Cascade Charter Township Clerk

CERTIFICATION

I hereby certify the foregoing to be a true copy of an Ordinance adopted at a Regular Meeting of the Cascade Charter Township Board on the 11th day of August 2010.

Ron Goodyke
Cascade Charter Township Clerk

MINUTES
Cascade Charter Township Planning Commission
Tuesday, January 20, 2009
7:00 p.m.

- ARTICLE 1.** Chairman McDonald called the meeting to order at 7:00 p.m.
Members Present: Hammond, Lewis, Logue, McCarthy,
McDonald, Pennington, Robinson, Sperla, Waalkes
Members Absent: None
Others Present: Township Planning Director Peterson and
Members of the Public.
- ARTICLE 2.** Chairman Robinson led the Pledge of Allegiance to the Flag.
- ARTICLE 3.** Chairman Robinson requested a motion for the approval of the
January 20, 2009 Agenda.
- Member Lewis motioned to approve the January 20th Agenda
as presented, supported by Member McDonald. All in favor
with none opposed, the motion carried.**
- ARTICLE 4.** **Approval of the Minutes from the December 15, 2008 Meeting.**
Chairman Robinson asked if there were any corrections to the
December 15th Minutes or requested a motion for approval.
- Member Waalkes asked on Page 3, under the roll call vote, that he
be added as a yes; he was present at that meeting and voted in
favor.
- Member Waalkes motioned to approve the December 15, 2008
Minutes with the addition on Page 3, supported by Member
Hammond. All in favor with none opposed: December 15,
2008 Minutes approved as corrected.**
- ARTICLE 5.** **Approval of the Minutes from the January 5, 2009 Meeting.**
Chairman Robinson asked if there were any corrections to the
January 5th Minutes or requested a motion for approval.
- Member McCarthy asked on Page 4, last sentence be cleaned up
and Staff noted the sentence should read "...although we did just
have a site plan...."
- Member Lewis motioned to open the Public Hearing,
supported by Member Hammond. All in favor with none
opposed: January 5, 2009 Minutes approved as corrected.**

ARTICLE 6.

Case # 08-2960: Forest Hills Golf / Watermark Condo's
Address of Property: 5536 Cascade Road
Requested Action: Basic Plan Review for an amendment to add a new office / health club.

Planning Director Peterson referenced the site plan drawing in the Commissions' packets noting the location of the project within Watermark and also referred to the copy of the Golfview Planned Unit Development (P.U.D.).

The Applicant is requesting to amend the existing P.U.D. and add a new office/health club near the clubhouse at the end of Galbraith Avenue.

The building is a 17,000 square-foot (s.f.) building with 13,000 s.f. for the office and approximate 4,000 s.f. for the health club.

The Watermark Development is currently under a P.U.D. and has been so since 1997. Originally the P.U.D. included what became the Golfview project. They were separated after Watermark developed and the Golfview portion of the project did not. The golfview project went to its own P.U.D. in 1999.

The Watermark P.U.D. does not contemplate this additional building and therefore, the Applicant must proceed through the P.U.D. amendment process.

Staff has met with the Applicants to review the project and has indicated to them that there are concerns regarding the project:

- a. Adding more office space to the area.
- b. Bypassing the negotiated 1997 P.U.D.
- c. The health club ideas seems like a good fit but not the primary user of the building.
- d. Large multi-tenant will want exposure to Cascade Road.
- e. Splitting off a one-acre piece of property.

Staff has indicated that if the project were just a health club, it would have more merit and would fit within the development as an accessory to the golf course. This would be the same as when the swim center was approved in 2000 as an accessory use to the clubhouse.

The Applicant has submitted this package as required for the Basic Plan Review that allows the Applicant to introduce the project to the Planning Commission for their input. This review is a little different since Staff normally works with the Applicant to work out some of the issues, and as of this point, have not been able to do so. Staff did explain to the Applicant that they are not in favor

of the project as presented and the Applicant would still like to hear from the Planning Commission.

If the Commission supports staff's opinion then that should be communicated to the applicant so they can decide on how to proceed.

If the Commission thinks the project is worthwhile or the Developer would like to continue with it, the Applicant would need to include:

- a. A complete landscape plan.
- b. Lighting plan.
- c. A completed site plan
- d. A completed site plan showing all four (4) sides of the building including the materials of the building.
- e. A perspective of the building from Cascade Road.
- f. Approval of the storm water plan from FTCH (Fishbeck Thomson Carr & Huber).

Member McDonald referred to Staff's report under adjacent area land uses regarding the gas station on the west if that was correct and Planning Director Peterson corrected the report in saying that there is a parking lot and the swim center on the west property.

Member McDonald asked if the project was in P.U.D. 2 or P.U.D. 15 and Planning Director Peterson clarified it is in P.U.D. 15, Watermark, and P.U.D. 2 is the Golfview project.

Member Pennington noted that his company has done some of the work on the Watermark project and are not involved in this particular project. He does not believe his involvement poses a conflict of interest.

Member Lewis also disclosed that he is a member of Watermark and lives in the development, but does not see any conflict of interest with this case.

Applicant Kevin Einfeld, 5510 Cascade Road, is one of the principals of Watermark, also present are principals, Doug Bauer and Steve Plakmeyer.

Watermark was developed in 1997 with approximately 160-home sites and includes a wonderful golf course, clubhouse and swim center.

The reason for coming before the Planning Commission is because the development has a void in their club and that is having a fitness center.

The fitness center would complete the project as many other developments offer a fitness center along with the golf course and pool.

The reason for the request for both the office space and the health club is based on the economy and the cost of the construction. Not many buildings of 4,000 s.f. are built due to the financial costs of the project therefore additional square footage justifies the costs. Watermark Development would move their offices into the building along with an interior design group and interest from a possible sports doctor who would lease space.

Applicant Einfeld referred to the changes for the existing service drive allowing for a circle area for the bag drop. They have also been in dialogue with the neighbors in implementing some traffic calming devices in the pick up areas as traffic is moving too quickly in the area.

The Applicant noted that a fitness center is very complimentary to a golf course. They have proposed fifty-two (52) parking spaces to accommodate the fitness center noting use of parking for the clubhouse would also be utilized.

One of the concerns of the project is its visibility from Cascade Road and Applicant Einfeld produced two (2) images showing the view. He noted the building is approximately 1700-feet from Cascade Road.

Applicant Einfeld also noted regarding traffic and traffic control, that with the improvements earlier noted and the current traffic flow, the addition of the fitness center would not impose any additional problems.

The Applicant also addressed their proposal for signage proposing that they would ask for a small increase in their current square footage, they currently have 50-s.f., and would also like to have additional small signage at the north end of the building.

The current office buildings in the development are quality buildings and is currently 100% leased. The Applicant said the new building will also be built of high-end quality and believes it would benefit the development.

Member Lewis asked the Applicant if they explored the possibility of adding just the fitness center to one of the current two buildings in the development. Applicant Einfeld said they believe the fitness center should be a part of the clubhouse facility to allow those at the fitness center to have lunch if they would like and provide more accessibility of the facilities to the community.

Member Lewis noted that the Township is completing their new Master Plan and the survey taken of the residents regarding Cascade Road. Ten years ago, when the survey was taken, people were concerned about office space and traffic on the road. People are still preferring to keep Cascade Road as it is without adding more office or retail between Hall Road and Burton Street.

Member Lewis also noted that there were conditions that were placed on the office buildings for the Watermark Development, along with others along Cascade Road, in that there had to be fifty percent (50%) occupancy of the office building. The current plan notes this is a request for an office building with a fitness center.

The Watermark P.U.D. was negotiated with the developers and the project was developed as stated within the P.U.D. It is difficult to amend the P.U.D. to include an additional office building and believes it would be more appropriate if done as the swim center, as a benefit to the clubhouse.

Currently there are approximately ninety (90) P.U.D.s within the Township and if this P.U.D. were amended to allow for additional office space, it could set a precedence for the others to do the same. If the project were proposed with just the fitness center that would benefit the clubhouse, the more likely the project would be supported. The people, however, would not support additional office space.

Member Lewis said he is personally having trouble opening up the P.U.D. that was heavily negotiated in 1997 for additional office space.

Member McDonald noted that the project should conform with the Master Plan and is also concerned with setting precedence in amending P.U.D.s. and referred back to another case that was asking to rezone to office space from residential and the people expressed their concerns with that case as well.

Member Sperla agreed with the previous comments and also noted that when the green space is removed, there is not anymore green space within the development. He noted that the other office buildings are more removed from the club, this project brings the

office use into the club area of the development. He agrees the office use could be focused around the fitness center with sports medical practitioners, etc., but general office use does not seem to conform to the clubhouse and fitness uses. He supports Member Lewis' idea in adding onto the current facility for the fitness center but is not in favor of additional office space.

Member Sperla also noted that there was a condition to one of the buildings that was developed and that was to be limited to 10,000 square feet, this proposed building is 17,000-s.f. and another restriction was a 25-foot height maximum. He believes in looking at the proposed office / fitness center that the proposed building exceeds the original P.U.D. standard.

Member Hammond asked the Applicant if they have spoken with the membership of the country club regarding the fitness center and Applicant Einfeld said they have and they are supportive of it. Member Hammond noted that 4,000-s.f. does not seem very big for a fitness center as he lived in a development that also had a fitness center. He noted that his development's center closed when MVP Sports Complex opened because their facility could not offer the amenities that MVP Sports could. He agrees that the office use is inappropriate and he is also concerned of the success of the fitness center in the future.

Chairman Robinson supported the concerns the Planning Commission has expressed regarding additional office space and opening up the established P.U.D.

Applicant Einfeld said he appreciates the Commissions' input and they need to figure out how to add the fitness center into the development. He is not in favor of putting the building off of Cascade Road since the community is not in favor of more office on the road and the project would entail additional parking. They would prefer to utilize the parking from the clubhouse.

Member Waalkes asked the Applicant if they have considered adding the fitness center onto the clubhouse and Applicant Einfeld said they have but there is no logical place for the addition. It is also not economically feasible to build a 4,000-s.f. building solely for the purpose of a fitness center.

Member Logue asked if the addition could be added to the swim center since locker facilities are already built and Applicant Einfeld said they could not add onto the swim center in a reasonable fashion.

Mr. Plakmeyer asked what size would be appropriate for a fitness center if 4,000-s.f. seems small? He also noted that the proposed office area is being proposed at 80% occupied. His understanding is that the residents do not want more office space that remains unoccupied and they have 80% of theirs occupied.

Chairman Robinson said it is not a question of occupancy of the office space but a matter of that the office space is larger than the fitness center. The proposal is for an office center with a health club, not for a health club with a few offices.

Mr. Plakmeyer asked if more health related offices would be more appropriate and Chairman Robinson said that what he is hearing from the Planning Commission is that the health club is the smaller than the proposed offices. The residents of the Township are also opposed to new office space on Cascade Road. He also noted that opening the P.U.D. would set precedence.

Planning Director Peterson also noted that the Township does not want the golf course to fail and when it was originally done, the offices were allowed on Cascade Road to help support the golf course. The Staff is open to having a fitness center but opposed to additional office use. The two (2) office buildings that are along Cascade Road is part of the comprise established when the P.U.D. was developed in 1997.

Member Sperla noted that if the project were proposed as extended use of the clubhouse it would be more acceptable but to open a P.U.D. for office space is setting precedence and is not in support of additional office space.

Member Waalkes said he would not oppose the fitness center with related uses and the building could be reduced to approximately 10,000-s.f.

Member Sperla also noted that the other country clubs have their fitness centers within their clubhouses and this has the feel of an independent project.

Mr. Plakmeyer noted that fitness centers today do not necessarily contain locker rooms as people are looking for a quick way to exercise and they leave. He does not believe that locker rooms are necessary for the project.

Member Hammond suggested that the Applicant show the Commission that some of the additions to the current clubhouse and swim center would not work. Mr. Plakmeyer said they have spent \$1 million in the swim center and they do not want to disrupt

that facility. There is a service drive, drop off and golf course that surrounds the clubhouse and the addition is not feasible on that building. They are trying to establish more viable business opportunities in support of their project.

Member Lewis also suggested that the current building houses the golf carts and asked if that area could be renovated into the fitness center providing access to showers and locker rooms. The golf carts could be stored in a freestanding building. Mr. Plakmeyer said the area was considered but would not allow for a freestanding health club facility and the cart storage area is a basement area that is not easily accessible.

Member Lewis asked whom the Applicants met with in obtaining support of the project and Applicant Einfeld said that they spoke with the Watermark Board who favored the project.

Planning Director Peterson suggested tabling the Basic Plan Review. It seems that all agree that the health club use seems appropriate and anything more than the club, the uses should be limited to related uses of the health club. The building's height and square footage would also need to meet the previous requirements of the P.U.D. that has been established. The Applicant should also provide a study of the need for a fitness center. If the case were tabled, the Applicant could further develop his plans according to the comments heard this evening and request another Basic Site Plan Review.

Member McDonald clarified for the Applicant that the area is not compatible for office use and does not want the Applicant misled. If there were a couple of offices related to the health club, including the Watermark offices, that may be considered as acceptable but the health club should be the predominant use of the building.

Member Sperla motioned to table Case # 08-2960: Forest Hills Golf / Watermark Condo's, supported by Member Hammond. All in favor with none opposed.

ARTICLE 7.

Any Other Business.

Chairman Robinson opened the meeting for any other business. There was no other business of the Planning Commission.

Member McDonald noted that the Planning Commission should consider the issues of heliports in their residential areas as Ada Township has recently addressed this.

ARTICLE 8.

Adjournment

Chairman Robinson requested a motion for adjournment.

Member McDonald supported by Member Hammond moved to adjourn. The motion carried and the meeting was adjourned at 8:25 p.m.

Respectfully submitted,

John Sperla, Secretary

Lisa Hern, Recording Secretary

MINUTES
Cascade Charter Township Planning Commission
Monday, July 20, 2009
7:00 p.m.

ARTICLE 1. Secretary Sperla called the meeting to order at 7:00 p.m.
Members Present: Lewis, Logue, McCarthy, McDonald,
Pennington, Sperla
Members Absent: Hammond (excused), Robinson (excused),
Waalkes (excused).
Others Present: Township Planning Director Peterson, Recording
Secretary Hern and Members of the Public.

ARTICLE 2. Secretary Sperla led the Pledge of Allegiance to the Flag.

ARTICLE 3. **Approval of the Agenda for the July 20, 2009 Planning
Commission Meeting.**
Secretary Sperla requested a motion for the approval of the July
20, 2009 Agenda.

**Motion was made by Member McDonald and supported by
Member Pennington to approve the Agenda as presented.
Motion carried unanimously.**

ARTICLE 4. **Approval of the Minutes from the July 6, 2009 Meeting.**
Secretary Sperla asked if there were any corrections to the July 6th
Minutes or requested a motion for approval.

Member Logue noted a correction needs to be made on Page 4, last
paragraph containing Member Sperla's motion, the motion needs
to reflect the property location at 2950 Kraft Avenue with a permit
granted to co-locate a microwave dish on the tower at that location.

**Motion was made by Member Lewis and supported by
Member McCarthy to approve the July 6, 2009 Minutes as
corrected. Motion carried unanimously.**

ARTICLE 5. **Case # 08-2960: Forest Hills Golf/Watermark Condo's
(From the Table of January 20, 2009)**
Address of Property: 5536 Cascade Road
**Requested Action: Basic Plan Review for an amendment to add a
new office/health club.**

**Motion was made by Member Lewis and supported by
Member McDonald to remove Case # 08-2960: Forest Hills
Golf/Watermark Condo's from the January 20th Table.
Motion carried unanimously.**

Planning Director Peterson said the Planning Commission last saw this project on January 20, 2009 and at that meeting, the Commission gave the Applicant some direction on this project. The Applicant has attempted to respond to those concerns and is asking that the Commission review their revised plans.

One of the changes to the plan is the building's location. The building site has been moved from in front (north) of the clubhouse to a location west of the clubhouse.

The Applicant has enlarged the fitness center and made the building a little smaller. It is Staff's preference that the fitness center be at least half of the building's square footage. There was some support from the Commissioners in having Watermark's offices within the building.

Planning Director Peterson said he has spoken with the Applicant regarding the types of offices within the building and it is Staff's preference that the offices be limited to "professional" offices to limit the impact on traffic onto the site and the need for signage on Cascade Road.

Staff's preference regarding signage for this project is not to have additional signage and considers the fitness center an amenity to the country club they have.

Staff indicated the Applicant is looking for the Commissions' opinion regarding the project prior to it going to Public Hearing.

Planning Director Peterson said there have been some good changes within the plan. He was hoping to see the fitness center take at least half of the building's space and wanted the Applicant to have a clear understanding that there would not be additional signage on Cascade Road as a result of this project.

The Applicant is here this evening to present the new plans for further questions of the Commission.

Secretary Sperla opened the meeting for questions for Staff by the Commission.

Member McDonald asked if the Planning Commission needed to take action on this case this evening or if they were to provide the Applicant with their input regarding the project. Planning Director Peterson said that the Applicant is looking for the Commissions' feedback prior to investing in the formal drawings and paperwork that would be required to proceed further with the project.

Member Pennington asked if the main reason Staff does not want signs on Cascade Road is because of the amount of signs currently there? Planning Director Peterson clarified that the intent is not to have any new signs out there and if Watermark would like to change their existing signage to reflect the fitness center that would be allowed. Staff's intent is that there not be any additional signage on Cascade Road due to this project.

Secretary Sperla asked if this project is part of a P.U.D. (Planned Urban Development) that was previously approved and does the P.U.D. include a 10,000-square foot limit on all buildings? Planning Director Peterson clarified that the 10,000-square foot limit comes from the Cascade Corridor Plan that the Township has used for those buildings along Cascade Road. The Watermark Clubhouse is larger than 10,000-square feet along with the Fishbeck buildings. Secretary Sperla asked if the buildings have to have Cascade Road frontage in order to apply and Planning Director Peterson said it has been applied to the buildings that are alongside Cascade Road.

There were no further questions of Staff and Secretary Sperla invited the Applicant to address the Planning Commission.

Wayne Visbeen, Architect for the Applicant, thanked the Commission for reviewing their plans and providing input.

The first building they proposed was 17,000-square feet that was two-stories tall plus a lower level for storage and equipment. The new plan proposes a 7,100-square foot walkout with the building's location being adjacent to the clubhouse, next to the driving range and the cart storage area.

As far as the building's use, the Applicant is planning on having the health facility in the entire lower level with an entrance on the main level with steps going down to the facility. The walkout entry would go directly into the health center. The lower level would also have some additional offices and storage.

The main level would have the professional offices. Mr. Visbeen noted that he is personally looking into an office in this facility.

He noted the Applicant is trying to comply with the requests and concerns provided at the January 2009 meeting and with a smaller facility and new location they believe this is a much better plan. He believes the new plans fit the character of Watermark.

Mr. Visbeen noted there are potentially three (3) entrances to the building: one (1) into the health facility and one (1) or two (2) for the offices depending on the floor plan.

Member McDonald noted the new plan is much more appealing than the plan presented in January with its location, size and use. Member McDonald asked if the new proposed location for the building is in the mound near the dumpster and asked if that mound would be excavated. Mr. Visbeen distributed updated drawings to the Commission noting that the building is a walkout and the mound is a natural slope. The side would face the driving range, the front would face the parking lot and the back faces the golf cart storage.

Member McDonald asked if the drive along the driving range stays and Mr. Visbeen said yes.

Secretary Sperla asked if there would be locker room facilities within the fitness center and Steve Plakmeyer, 2410 Cascade Springs, said a locker facility has been included for the fitness center within the building. Adding the locker rooms took the fitness facility's square footage from approximately 4,200-square feet to 5,000-square feet. There will be showers, bathrooms and lockers available at the fitness facility.

Secretary Sperla asked if the Applicant has thought through the signage and Mr. Visbeen said they would like to have additional 25-square feet but understands Planning Director Peterson prefers they use the existing signage. Planning Director Peterson noted that the existing sign is limited to 50-square feet for the golf course. Mr. Visbeen said they are hoping to add 25-square feet to the current signage.

Secretary Sperla recalled concern in passing the P.U.D. for the project and having the P.U.D. change ownership with the new owner making requests to amend the original P.U.D. Secretary Sperla asked Member Lewis how he feels this plan fits in with the current P.U.D. Member Lewis said he does have concerns when introducing new owners to a P.U.D.

Member Lewis asked if the current Watermark offices are located in the building by Cascade Road and Mr. Visbeen noted that currently, the offices are located in the clubhouse and they are running out of room in the office area. He also noted that there is a small portion of their business office in the building on Cascade Road but have not committed to moving those offices into the new facility.

Member Lewis expressed concern in having multiple parties involved as owners and who the Township is to deal with regarding the P.U.D. Mr. Visbeen noted that the same people are still involved in the ownership.

Secretary Sperla asked if the same owner own the golf course, country club, and fitness facility all? Mr. Visbeen said yes and there are some new LLC's that have been formed in dealing with the banks, that is the only difference, the same owners are still involved.

Member McDonald referred to the document dated July 10, 2009 in the summary where it says that there is a demand from the 500 member families of the Watermark Country Club and Swim Facility for a fitness component on the grounds and Staff noted in their report they would like to see a feasibility study. Were the families actually polled regarding their needs of this fitness facility? Mr. Visbeen said they have spoken with the members and have spoken with the Association's Board. They shared their original plans with the Association Board who was very supportive of the facility, as it seemed to be one area the country club was lacking in terms of fitness component. They have recently met with the Association and shared the new plan and favored the new plan as well. He said they could poll the members and the community for their opinions regarding the project but believes there would be a high majority in favor of the project. Mr. Visbeen also noted that when potential members inquire to membership at Watermark, they often ask if the facility has a fitness center and, currently, that is the one (1) component missing and many potential members do not join because there is no fitness center. He further clarified that they have spoken to the Association Board Members but have not polled the community because they do not want to promote plans that might change after the Planning Commissions' review.

Member Lewis noted that he is a member at Watermark and after the first presentation amongst other members; the members were discouraged with the initial location of the facility. After reviewing the building's new location, Member Lewis spoke with a couple of members and the new location is much more favorable and complimented the Applicant in making the changes.

Secretary Sperla asked if the new drawings are what they have in mind for the project and Mr. Visbeen said these are the plans.

Secretary Sperla asked if the facade for the fitness center is compatible with the country club and Mr. Visbeen said it is.

Member McDonald noted that the Applicant's report also notes that the architects will be incorporating many green aspects into the new building and asked what they are proposing at this point. Mr. Visbeen said he is proposing geothermal and would like to make this a very state-of-the-art green building. The building will be under Energy Star that goes for silver, gold, platinum levels and hopes to make it a green building and targeting energy conservation.

Member McCarthy asked in the previous plans there was a proposal to redesign the parking lot and the new plans look like they have gone back to the existing parking lot? Mr. Visbeen said they have gone back to the existing parking lot with minor adjustments with some additional spaces by moving a curb-cut down with an option to add parking, if needed, towards the north end.

Planning Director Peterson noted that this type of detail will be included once the Township receives the formal site plans along with other project details.

Member McCarthy also said she has a concern of the width of the drive going down the side with the parking spaces along with the tree that is located on the corner. Mr. Visbeen said that those are specific issues they have not addressed yet and will once they have received the Commissions' support of the new plans.

Member McCarthy asked why the offices were put on the main floor and the health club in the lower level? Mr. Visbeen said that the health club should be located on the lower level, on top of the concrete to support the machines and the weight equipment. Having the office entrance on the main floor also allows them to have a beautiful entrance and the steps to the health facility are often viewed as a "game" to the members and they do not mind going up and down stairways as compared to those who visit an office.

Secretary Sperla asked how profitable it is to have offices in the building that are not tied-in with the fitness club, such as an outside lawyers office or doctors office? Mr. Visbeen noted that the office is a destination and being located on the site of a country club is beneficial as he can walk to lunch, as an example.

Secretary Sperla noted that the architect plans to have his office in the building along with the health club's offices, is there anyone else that currently has interest in having an office in the building. Mr. Visbeen said there is an interior designer who is interested in sharing amenities with Mr. Visbeen's architectural firm.

Member Lewis asked if the building would block the view from the country club's main banquet room and Mr. Visbeen said the buildings are 50-feet apart and the building is set back from the country club so the view to the 18th green will remain the same very much as it is today and does not foresee a problem.

Secretary Sperla asked Staff if the construction of the new building would require an amendment to the current P.U.D. Planning Director Peterson said it would. He noted that adding the new building, any changes to signage, approving the site plan are some basic things that would need to be amended. Secretary Sperla said he is not in favor of numerous changes to a P.U.D. as they are usually heavily negotiated between the Township and the original owners. He would like to keep the amendments to a minimum. Secretary Sperla said he would also like to keep the current signage square footage as it currently is as this is not a high commercial area and the signage along the road is minimal and very low and he would like to see minimal changes to the signage currently on Cascade Road.

Planning Director Peterson shared his perspective on the signage, the Township does allow for up to 64-square feet for non-residential use in a residential zone. If this were allowed, however, Staff believes it would open the requests from other offices in the area to request the maximum 64-square feet for their signage.

Member Pennington said that he thinks the new plan is a good one and does not have any concerns regarding the split between the office space and fitness center.

Member Lewis said that he would prefer the building to be 10,000-square feet and Mr. Visbeen said they did review the area with a 10,000-square foot footprint that was a single floor and it had more of a visual impact on the site and believe the current, 7,000-square foot footprint is more visually appealing and has less impact on the site. From an architectural perspective, the office space needs 6,000-square feet, the health club needs 6,000 feet, etc. and hopes the Planning Commission will consider the 7,000-square foot footprint as it is most economical and would be the most visually appealing.

Member McDonald noted that with the 7,000-square foot footprint the Applicant is minimizing the impact on the site. In reviewing the current plan, he is not as adamant about the 10,000-square foot building if the building at 7,000-square feet as presented this evening is the building that is constructed. Mr. Visbeen noted that

with the building being stacked on a natural slope it will help with making the building a green building.

Member McDonald noted that the plan is nicely done as presented as it is not obtrusive to the residents in the area and is done professionally and discreetly. He likes the project and concurs with the comments regarding the signs.

Secretary Sperla remains concerned with the P.U.D. amendments. He likes the way the building fits in and the closer the building can be at 10,000-square feet the more favorable that would be. Member Pennington said he does not agree with having the building's size come close to 10,000-square feet when the building is well done with the 7,000-square foot footprint.

Member Lewis noted that members of the community do read the ordinance with the 10,000-square foot footprint and the Master Plan was recently amended and the community's feelings are to keep Cascade Road the way it is. This building is much better than the one first proposed and he is in favor of the project.

Member Logue questioned if all of the buildings within the P.U.D. have been built out and if those tenants will view this as an opportunity to expand. Could the fitness center be added onto the clubhouse? Mr. Visbeen said that the site has over 200-acres and makes this P.U.D. very unique as it is a golf club with its own P.U.D. and asked if there were any others within the Township. Planning Director Peterson noted Centennial Country Club and Quail Ridge have their own P.U.D.'s.

Planning Director Peterson addressed Member Logue's concerns noting that the clubhouse was limited to 30,000-square feet when it originally went in and is built out.

Member McDonald noted that one of the purposes of a P.U.D. is that there is room for flexibility and negotiation within the ordinances and to handle specific requirements and the Applicant has met some of the concerns expressed at the January meeting. He believes that Member Logue's concern is in setting precedence but does not believe allowing this project would do so since this is a unique P.U.D. and it is adding a specific building for specific purposes.

Secretary Sperla believes that when negotiations take place it should be done all at once and not in pieces, otherwise, they can keep chipping away at the compromises made early on become meaningless. He believes this should be done for all P.U.D.'s and that all aspects and potential should be reviewed early on.

Secretary Sperla also clarified that a 10,000-square foot footprint is not what he prefers but he does prefer to see a footprint that is closer to the 10,000 to 14,000-square feet as it might be viewed more favorably.

Member McDonald said that he agrees to a point and noted that the Planning Commission does have the final say in the building plans. At this time he is hearing more favorable responses to the smaller footprint.

He also noted that P.U.D.'s are developed when there is not a need for something, such as a fitness center. People's needs change and now there is an interest in having a fitness center on the site and agrees that he does not like seeing amendments to P.U.D.'s four or five times. This project, however, seems to be a reasonable change that is not encroaching on any of the neighbors, the residents or the development.

Mr. Visbeen noted the economic climate is different and adding a health center would make the project work.

Secretary Sperla said if the building were totally designated as a health center, he would not have any issues with the project as it supports the club. Since there is office space within the building he has some concerns with the amendments. Mr. Visbeen noted the health club is fifty percent of the building and there is additional storage, mechanical room, etc. on that level that equals 7,000-square feet along with the 7,000-square feet for the office level; it is just not all lease able space. Member McDonald noted to the Applicant that it would be very helpful to the Planning Commission if they could know the exact usage planned for the building's square footage and Mr. Visbeen said he could add 500-feet here and revise the plans to show the mechanical rooms, storage, etc.

Mr. Visbeen asked the Planning Commission if they favored the updated plans and if it compatible with the club and if it is compatible with the neighbors. Mr. Visbeen said he is sensing both very favorable feedback and negative feedback and does not wish to proceed any further until he has clearer direction.

Member Lewis noted that the Planning Commission is not voting upon the plans as they have been presented this evening but is hearing from the Commission favor of the new plans for the site.

Secretary Sperla said that when the project reaches the point of having definitive plans regarding the building's construction; he

will be very interested in the building's details to ensure that the plans presented are the plans that are implemented by the Applicant.

Member McCarthy said the new plan has vastly been improved upon since the plan originally submitted in January. She was not a part of the original Planning Commission when this P.U.D. was developed and she did find the documentation regarding the last amendment that was done twelve (12) years ago and the world has vastly changed during that time. She said she is not opposed to amending a P.U.D. but does share her colleague's concerns in having reasonable amendments. She looks forward to reviewing the specifics for this project.

Secretary Sperla thanked the Applicant for their added effort in developing a more favorable site plan.

Planning Director Peterson said the direction he will provide to the Applicant is to proceed with their documents and to go forward in the process to a Public Hearing. He noted that the next phase would include the detailed site plan review for the Public Hearing. Member Lewis said the Commission would like to see the detail regarding the square footage devoted to the health club, storage space and office space. Member McDonald added that the more space that the fitness related area takes in the lower level the more favorable the project will be with the Township, they would like the health facility to be in more than 50% (fifty) of the building.

ARTICLE 6.

Any Other Business.

Secretary Sperla opened the meeting for any other business. There was no other business of the Planning Commission.

Planning Director Peterson noted that Centennial Park Overlay Zone and Farmland Preservation sections of the amendments for the Zoning Ordinance are next for review. Chairman Robinson has requested to attend the committee meetings and Staff is looking for any other interested Commissioners, approximately two (2) or three (3) volunteers. The meeting date has not been established yet.

Secretary Sperla noted that Member Hammond lives in Centennial Park and believes he would be an interested participant on the committee. Member Logue said he is interested in serving on both committees: Centennial Park and Farmland Preservation. Member McDonald said that if a fourth volunteer is needed, he would be available and Member Lewis said he would be available as well if needed.

Planning Director Peterson said that if someone's plans change he will contact either Member Lewis or Member McDonald for their availability.

ARTICLE 8.

Adjournment

Secretary Sperla requested a motion for adjournment.

Motion was made by Member Lewis and supported by Member McDonald to adjourn. Motion carried unanimously and the meeting was adjourned at 8:10 p.m.

Respectfully submitted,

John Sperla, Secretary

Lisa Hern, Recording Secretary

MINUTES
Cascade Charter Township Planning Commission
Monday, September 14, 2009
7:00 p.m.

- ARTICLE 1.** Chairman Robinson called the meeting to order at 7:00 p.m.
Members Present: Hammond, Lewis, McCarthy, McDonald, Pennington, Robinson, Sperla, Waalkes.
Members Absent: Logue (excused)
Others Present: Township Planning Director Peterson, Recording Secretary Hern and Members of the Public.
- ARTICLE 2.** Chairman Robinson led the Pledge of Allegiance to the Flag.
- ARTICLE 3.** **Approval of the Agenda for the September 14, 2009 Planning Commission Meeting.**
Chairman Robinson requested a motion for the approval of the September 14, 2009 Agenda.

Motion was made by Member Sperla and supported by Member McCarthy to approve the Agenda as presented. Motion carried unanimously.
- ARTICLE 4.** **Approval of the Minutes from the August 17, 2009 Meeting.**
Chairman Robinson asked if there were any corrections to the August 17th Minutes or requested a motion for approval.

Motion was made by Member Lewis and supported by Member Sperla to approve the August 17, 2009 Minutes as submitted. Motion carried unanimously.
- ARTICLE 5.** **Case # 09-2960: Kevin Einfeld/Watermark Country Club (PUBLIC HEARING)**
Address of Property: 5536 Cascade Road SE
Requested Action: The Applicant is requesting an amendment to the Watermark P.U.D. that would allow the construction of a new fitness center/office building.

Planning Director Peterson said the Applicant is requesting Preliminary Plan Approval in order to amend the existing Planned Unit Development (P.U.D.) and add a new office/fitness center at the end of Gailbraith Avenue.

The site for the health facility/offices is just west of the country club building and the Planning Commission has received the latest drawings of the plan.

The Commission has seen this case a couple of times. This project was introduced at the January 20, 2009 meeting. At that meeting, the Commission agreed that the fitness center was a compatible use but expressed concern regarding how much office space was associated with the project.

At the July 20, 2009 meeting, the Applicant revised the January 2009 plan and submitted a revised site plan. At this meeting, the Commission felt the Applicant responded well to the original comments by addressing several issues including most notably the new location and the downsizing of the building.

The P.U.D. amendment is necessary in order to allow another building in the project.

In addition to the need to amend the Ordinance to include this additional building, there are other changes that are needed or that they are asking for as a result of this project. Staff has compiled a small table in their report showing the issues and Staff's comments:

The Applicant has requested an increase in the amount of signage on Cascade Road to a maximum 64-square foot sign. Staff recommends denial of this request; as other office uses on Cascade Road are limited to 50-square foot sign.

The Applicant is requesting an increase in the existing on-site directional sign by 4-square feet and Staff would approve this request since this is a small sign that would benefit those coming to the site and enable them to find the building easier. Currently there is no language allowing the directional signage and Staff suggested adding it.

The Applicant is also requesting to add 50-square feet of wall signage to the new building. The existing clubhouse is allowed a 50-square foot wall sign and Staff suggested that the same amount be allowed for this building.

In regards to the building's use, the Applicant would like the ability to include in the lower level area, marked as "Sports Fitness" for office use. Staff recommends denial of this request keeping the lower level for the health club uses makes the building fifty percent (50%) health club and the office use is already a compromise. This plan shows the top level for office uses and in conversations with the Applicant, they have indicated putting office use in the lower level. Staff would like to see the lower level utilized for the fitness center.

The parking lot is being redesigned and will flow better. This design is closer to meeting the Township's requirements that are present today.

The Applicant is also requesting a side setback of 17-feet that does not meet the Township's required 25-foot setback. Staff approves of this request as the site has plenty of separation and the minimum having a smaller east side setback does not compromise the site.

Planning Director Peterson said the Township's Fire Department has reviewed the plans and does not have any issues.

The Township Engineer has reviewed the plans and has indicated conditional approval pending approval from the City of Grand Rapids for the sanitary sewer connection. Planning Director Peterson referred to the original sewer connection and said the Applicant will be able to connect in another area. This item will need to be addressed prior to proceeding.

The Applicant is redesigning the parking lot area that includes some areas that are available for additional parking if needed in the future. The biggest issue would be to make sure the Applicant meets the Township's standard storm water regulations.

Staff's report also includes the Standards with comments.

Staff believes the Site Plan has been adjusted to address the major issues raised at previous meetings and recommends approval of the P.U.D. amendment provided the following issues are addressed:

1. Signage issues
2. Use of the building
3. Sanitary sewer connections
4. Review by Watermark Associations

The Applicants have requested to come before the Planning Commission prior to approaching the associations to see if the plan is feasible. The Planning Commission needs to hear the Association members' comments regarding the project.

Member Lewis noted that the parking is a problem by the clubhouse and when the facility is in full use, you have to park far away from the facility. There are enough parking spaces but the distance is rather far. He is also concerned with holding additional parking in reserve. Planning Director Peterson believes the Applicant's redesign of the parking will help with traffic flow. Member Lewis agreed the redesign would help the traffic flow.

Member Sperla still questions who the Township is working with on the project, are there multiple owners and if so, should the amendment include the updated owners of the property? Planning Director Peterson said they have the property owners signature but would speak with the Township Attorney to ensure that the amendments are done correctly.

Representative Wayne Visbeen of Watermark LLC and architect for the project said they have reduced the square footage of the building based on the Commissions' comments at the last meeting.

They also understand the Commissions' request to have the fitness center be the tenant of the lower level of the building. He believes that at the last meeting, the Commission said they were comfortable having a Watermark office in the lower level. He agrees in not having a general office for rent in the lower level, the office would be strictly for Watermark's use and asked Planning Director Peterson if that was his understanding.

Planning Director Peterson said that was not his understanding and understood that the Watermark offices would be upstairs. Representative Visbeen said there are other sports-related professions who are considering leasing the space. Their goal is to have it be all fitness but if they are not able to lease the space, they would like to utilize it for Watermark's offices.

Representative Visbeen asked for clarification regarding signage and the 50-square feet they are requesting is for building signage. They are hoping to divide the 50-square feet and have 10-square feet above each door in the transom glass (i.e. Visbeen and Associates, Inc.) and one above Snap Fitness and the additional tenant. They are also hoping to have a 20-square foot sign on a stone base in the front grass area as shown on the drawings and dedicated for Snap Fitness. Planning Director Peterson said the Township would like to see the wall signage limited to 50-square feet. Representative Visbeen asked if 30-square feet on the building and 20-square feet on an attractive monument were acceptable? Planning Director Peterson said that he would be agreeable to that.

Representative Visbeen said they are also requesting a 64-square foot sign on Cascade Road. He understands that everyone is at 50 or 54-square feet and Planning Director Peterson said the Cascade Road Corridor study was done in the 1990's and buildings are allowed a maximum of 50-square feet on Cascade Road.

Representative Visbeen said they are requesting additional square footage since all those buildings have direct access off of Cascade Road and direct visibility of the business. They are looking to pull

additional attention to their facilities that is off Cascade Road and gain more visibility but will leave this decision to the Planning Commission.

Member Sperla asked if the same materials would be used to construct the new building and match the clubhouse. Representative Visbeen said they would match but the materials might be different. They are looking to make the new building a "green" building and have not decided on the materials yet, but the buildings will match and their design elements are very similar.

Motion was made by Member Sperla and supported by Member McDonald to open the Public Hearing. Motion carried unanimously.

Planning Director Peterson said the Township did not receive any phone calls or letters concerning the project.

Mark deWald, 1601 Galbraith SE, was concerned with additional office going into the building since there is vacant office space available close by already. After hearing the plans for the building it seems like a nice facility.

Motion was made by Member Lewis and supported by Member McDonald to close the Public Hearing. Motion carried unanimously.

Member McDonald appreciates Staff's work and agrees with their recommendations in their report including the 20-foot square foot stone directional sign and 30-square feet on the building. He is concerned with allowing Watermark offices in the lower level and dedicating the space solely for that use. The initial intent is the more square footage dedicated to the fitness center.

Member Pennington asked if that area could be dedicated to Snap Fitness and listed as an accessory to the fitness center and limited to those in the building? Planning Director Peterson said it would be difficult to regulate the use if allowed to use as an office. Once it becomes an office, it would be used as an office and difficult to regulate. Chairman Robinson agreed with Staff and the Commission agreed the fitness center should have 50% capacity of the building in the lower level. Member Lewis noted the goal of the Commission was to have the occupancy as even as possible and understands the Applicant's request but would like the building remain that the lower level remain dedicated for the fitness center in the lower level.

Representative Visbeen said their goal is to lease the space for the fitness center but in case they cannot lease the space, they would like to put Watermark into the space and utilize the area so it does not remain empty.

Member McDonald asked where Snap Fitness' office space would be and Representative Visbeen said within their leased area, there is only one (1) office.

Member Sperla said he is more comfortable in keeping the lower level dedicated to the fitness center and not allow office use in the lower level.

Member Hammond also said he favors in keeping the office use in the upstairs level of the building and favors the distinct separation of office and fitness center.

Member McCarthy favors keeping the space dedicated to the health profession as the Applicant has commented that they have interested health professionals considering the space.

Member Waalkes noted that the building is not designed to accommodate office use in the lower level. He does not see Watermark's usage of the space as a problem.

Regarding the signage on Cascade Road, Member Sperla said he is not in favor of granting more square footage on the sign. If a larger sign were allowed, that would set precedence and he is not willing to set precedence and believes the sign should remain at 50-square feet.

Member Waalkes noted that the current 50-square foot sign could be redesigned to allow for recognition to those in the building.

Member Lewis noted that the 50-square foot sign was discussed at the July meeting in great detail and the Applicant did not wish to enlarge the sign at the time. He supports remaining with the 50-square foot sign.

Member Hammond also supported keeping the square footage of the sign at 50-square feet. The businesses that do go into the building are destination businesses and supported redesigning the sign to allow for recognition of those in the new building.

Member Lewis said he is still concerned with the parking and Representative Visbeen noted they have met the requirements for the number of parking spaces and the distance from the parking spot to the door should not be an issue. He does not foresee the

parking lot always being so full; there are a few peak times that numerous engagements would be happening at the same time.

Chairman Robinson asked why the need for the reserved parking spots, what might change that the additional parking might be needed in the future? Representative Visbeen said they designated future parking if the need should arise in the future and in case, for some reason, they have a need for more.

Member McDonald said he understands Member Lewis' concerns but he is comfortable with the parking.

Motion was made by Member Sperla and supported by Member McDonald to approve the request for an amendment to the Watermark P.U.D. that would allow the construction of a new fitness center/office building provided the following issues are addressed:

- 1) Cascade Road signage to remain at 50-square feet
- 2) No general office use in the lower level
- 3) Directional signage is allowed.
- 4) The building shall have 30-square feet of wall signage and 20-square feet of directional signage on the ground
- 5) Developer is to meet with Watermark Associations and review plans for their comments
- 6) Sanitary sewer connections are approved.

All in favor with none opposed, the motion carried.

Member Lewis asked if the Applicant would be reviewing the plans and meeting with all of the Watermark Associations and Planning Director Peterson said the Applicant would be presenting their plans to the homeowner's association, and the club members for their comments.

Member Sperla asked that the P.U.D. language be corrected to reflect the drawings received at this meeting and Planning Director Peterson said that provision has already been addressed.

ARTICLE 6.

Any Other Business.

Township Building Official, Butch Visser, addressed the concerns from the Planning Commission regarding the possible new State law regarding sprinkler systems in residential homes.

He explained the current law process for the State of Michigan and noted that Townships are not allowed to amend State laws and codes. He does not believe the regulation will be in the next code stipulated by the State as the code is receiving a lot of opposition

from builders at this current time. He will keep the Township updated if anything changes.

Member Sperla asked if there has been any progress with Tassell Park and Planning Director Peterson said they are exploring options.

Planning Director Peterson reported that the round a bout feasibility study has been completed and the project does work at Cascade Road and 28th Street. The Downtown Development Authority (DDA) will manage the project and will be moving forward with it.

ARTICLE 9.

Adjournment

Chairman Robinson requested a motion for adjournment.

Motion was made by Member McDonald and supported by Member Waalkes to adjourn. Motion carried unanimously and the meeting was adjourned at 8:22 p.m.

Respectfully submitted,

John Sperla, Secretary

Lisa Hern, Recording Secretary

STAFF REPORT

TO: Cascade Charter Township Planning Commission
FROM: Steve Peterson, Community Development Director
REPORT DATE: February 14, 2019
MEETING DATE: March 4, 2019
CASE: #18-3489/ Doug Dehaan – The Lanterns

GENERAL INFORMATION

- A. Applicant: Doug Dehaan
DDSBBB Group LLC
3299 Hudson Trails Dr
Hudsonville MI 49426

Telephone: 896-8300
- B. Status of Applicant: Developer
- C. General Location: The property is located at the SW corner of Thornhills and Thornapple River Dr.
- D. Requested Action: Rezone approximately 12 Acres to PUD to allow for 21 Condominium units.
- E. Existing Zoning on Subject Parcels: R2, Residential
- F. Zoning on Adjoining Parcels: PUD 44, PUD 43, PUD 39 and R2
- G. Parcel Size: Approximately 12 acres
- H. Existing Land Use on Subject Parcel: Single family home
- I. Adjacent Area Land Uses:
North - multi-unit attached residential
East - Church
South - single family detached residential
West - multi-unit attached residential

STAFF ANALYSIS

- A. The applicant is requesting Preliminary Plan Review in order to rezone approximately 12 acres for a Condominium development Planned Unit Development called the Lanterns. This rezoning request is for 21 single-family site condo units.
- B. The property is zoned R2, single-family, and is Master Planned as Suburban Residential. It should be noted that the property to the west and north is multifamily attached residential and is master planned as community residential, which allows for higher densities.
- C. Suburban Residential is described as single-family detached development.
- D. The applicant has drawn a plan showing how the property could be developed with 21 lots using 50% open space with a minimum of 10,000 sq ft per lot. The test plan includes multiple access points to Thornapple River Dr. the test plan has been developed to meet our requirements with no exceptions.
- E. The proposed plan provides for 50% of the developable acreage to be left as open space and a minimum lot size of 10,000 sq.ft.
- F. The applicant is seeking PUD rezoning in order to decrease the required setbacks from the interior road in order to increase the setbacks along the perimeter of the site. They are also asking to have one entrance since the KCRC want the curb cut to align with the drive across the street.
- G. The proposed subdivision will not have individual lots as a condominium. But the units will be single family detached units.
- H. The developer has indicated that the units will be about 3,000 Sq ft and a target of \$600-\$700k. While we do not regulate the price point the minimum home size in the Residential zone is 1,300 sq ft for a one story and 1,600 sq ft for a two story.
- I. The development will be served by public sewer and public water. They have had the project reviewed by the City of Grand Rapids and have obtained comments from the city. There a few outstanding items, but are mostly just construction details. The biggest issue is the need for the easements from the neighboring subdivision which they have agreed to grant.
- J. The open space that is being provided is mainly located around the perimeter of the site. Some of the open space will have to accommodate a sewer and water line connections to the development to the west.
- K. The developer also plans to do some significant landscape of the site. In addition to retaining the large wooded area to the north, they are landscaping the perimeter as well as the interior of the site and rather than provide traditional street trees have

developed a landscape plan around each unit. Since this is all common area as a condominium it will be easier to ensure that the landscaping remains in the future.

- L. The development will be utilizing private streets. The developer has developed the plans in accordance with our standards for private streets with the exception of the number of units on a dead end. The alternative would be to allow sever lots with direct access to Thornapple River Dr. the street names and addresses have already been approved by the Kent County Road Commission.
- M. Traffic counts on Thornapple River Dr are 5,600 to 8,800. According to the KCRC a two lane road has the capacity for about 10,000 cars. A 21 unit single family subdivision would add about 210 trips to the current traffic count.
- N. The Township Engineer has reviewed but has yet to approve the plan. The engineer has detailed a few items that need to be addressed prior to his approval. If approved, any condition should include the Township Engineer needed to sign off and approved the plan.
- O. No sidewalks are planned for the interior portion of the project but it does include an extension of the pedestrian path along the Thornapple river drive frontage to connect the subdivision to the light at the intersection. The pathway along Thornhills would be built by the developer and turned over to the Township for maintenance. The developer is also providing an easement to the south property line, to allow the pathway to continue in the future.
- P. They have already provided their condominium documents to our attorney for review.
- Q. As with all our residential project they will have an airport recognition statement in the PUD Ordinance.

R. Standards

Section 16.03 of the Zoning Ordinance requires that a Planned Unit Development must demonstrate that:

Standard	Staff Comment
Granting of the Planned Unit Development rezoning will result in a recognizable and substantial benefit to the ultimate users of the project and to the community, where such benefit would	The property is already zoned R2 and the development that are asking for is consistent with the R2 zoning. The changes to accommodate the PUD allow for an increase in setbacks to the surrounding neighbors and allow for one

otherwise be unfeasible or unlikely to be achieved.	entrance in the preferred location, while eliminating any other private entrances.
In relation to underlying zoning, the proposed type and density of use shall not result in a material increase in the need for public services, facilities and utilities, and shall not place a material burden upon the subject or surrounding land or property owners and occupants or the natural environment	The type of use and density is consistent with the master plan would not result in a material increase in the need for public services.
The proposed development shall be compatible with the General Development Plan of the Township, and shall be consistent with the intent and spirit of this Chapter	The project is consistent with the master plan
In relation to underlying zoning, the proposed development shall not result in an unreasonable negative economic impact upon surrounding properties	The development is very similar to the surrounding projects and being consistent with the underlying zoning would not result in an unreasonable negative economic impact
The proposed development shall contain at least as much green area and usable open space as would otherwise be required by this Ordinance with respect to the most dominant use in the development	met.
The proposed development shall be under single ownership or control such that there is a single person or entity having responsibility for completing the project in conformity with this Ordinance. This provision shall not prohibit a transfer of ownership or control, upon due notice to the Planning Director of the Township	met

Staff Recommendation

Staff recommends approval of the plan with the condition that the applicant satisfy the Township engineer prior to the PUD Ordinance being drafted. Once approved, we will put together the P.U.D. ordinance with the applicant for your review so you can make a recommendation to the Township Board.



February 28, 2019
Project No. 170168

Mr. Steve Peterson
Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546-7192

Re: Lanterns
Site Plan Review

Dear Steve:

We have reviewed the site plan for Lanterns, prepared by Exxel Engineering, Inc. The current site plan and basis of this review are dated February 26, 2019. The proposed project is a 21-unit condominium development with associated site improvements. The site is in the Thornapple River watershed, sub-drainage district Sentinel Point.

Stormwater and Drainage

Flood Control

The Cascade Charter Township Storm Water Ordinance (SWO), Section 1.04, states the ordinance shall apply to all development that requires any permit for work which will alter the stormwater drainage characteristics of the development site. The site is located in Stormwater Management Zone A, which requires retention of the 100-year storm event and infiltration to the greatest extent possible. Where soil conditions or other factors do not allow for adequate infiltration, the SWO requires detention of the 25-year storm event with a controlled release and a direct connection for stormwater runoff for the 100-year storm event, or detention of the 100-year storm event. The SWO also requires the first 0.5-inch of stormwater runoff be detained and released over a 24-hour period (Water Quality Control) and the 2-year storm event release rate be limited to 0.05 cfs/acre (Bank Erosion Control).

The proposed stormwater management design is to collect and infiltrate stormwater onsite in a retention basin located at the north end of the site. Stormwater runoff from all impervious and developed areas of the site will be collected and conveyed to the retention basin. The retention basin is sized for the 100-year storm event runoff from all impervious areas of the site.

The SWO requires a minimum of two soil borings extending a minimum of 10 feet below the bottom of a proposed retention basin and double-ring infiltrometer tests at the proposed bottom elevation of the basin. The applicant provided two double-ring infiltrometer test results taken at the retention basin location. The tests were taken at several feet below grade at the approximate bottom elevation of the retention basin. The test results revealed infiltration rates of 6 and 21 inches/hour. A design infiltration rate of half the lowest test result, 3 inches/hour, was used for design of the retention basin.

Soil borings were not provided. Soil borings are required to classify the existing soils beneath the retention basin and identify groundwater elevations. The bottom of retention basins shall be a minimum of four feet above the highest known water table elevation. Soil borings and observed groundwater elevation are required as a condition of engineering approval and shall be provided by the applicant.



Water Quality Control and Bank Erosion Control

The SWO requires the first 0.5 inch of stormwater runoff be detained and infiltrated where conditions permit, or released over a 24-hour period, and the 2-year storm event release rate be limited to 0.05 cfs/acre. The proposed stormwater management design will infiltrate all stormwater runoff up to the 100-year storm event. The proposed design is in accordance with the SWO.

Stormwater Runoff

The applicant provided stormwater calculations to size the retention basin. All stormwater runoff from the impervious areas of the site will discharge to the retention basin. Therefore, the site will not see an increase in rate of stormwater leaving the site.

Drainage Plan

The applicant has submitted drawings, calculations and additional documentation as required in the SWO Section 2.03, Drainage Plan. Please refer to the attached checklist for items and comments on each item. Please note a maintenance agreement is required before construction begins. The agreement should be submitted to the Township for review. The maintenance agreement and plan should include at a minimum cleaning of catch basin sumps and maintenance of the retention basin.

Utilities

The proposed project includes new 8-inch water main and 8-inch sanitary sewer main extensions through the site. The applicant has coordinated the utility design with the City of Grand Rapids (City) and has received engineering approval, with additional notes from the City to incorporate. City permits will be required for the new sanitary sewer and water main connections prior to construction.

The proposed sanitary sewer main will connect to an existing 8-inch sanitary sewer near the west property line. The proposed sanitary sewer will cross an existing drainage channel to make the connection. The drainage channel appears to be the outlet for an existing pond in the condominium development to the east. The proposed utility plan will fill the drainage channel to provide adequate cover over the sanitary sewer pipe. A new 2-foot diameter culvert is proposed to maintain drainage in the channel. The applicant provided supporting calculations for sizing of the culvert. A permit from the Michigan Department of Environmental Quality (MDEQ) will be required for the fill and culvert in the drainage channel.

Driveway

A new driveway is proposed for the development on Thornapple River Drive. The applicant coordinated the drive location with the Kent County Road Commission (KCRC). A permit from the KCRC will be required prior to construction.

Soil Erosion and Sedimentation Control

Soil Erosion and Sedimentation Control (SESC) measures are provided on the plan drawings. The applicant has included silt fence along the limits of disturbance and silt sacks in adjacent catch basins. SESC falls under the review and approval of the Kent County Road Commission and a permit is required before construction can begin. The SESC measures indicated on the drawings appear appropriate given the expected work.



Mr. Steve Peterson
Page 3
February 28, 2019

Summary

As a condition of engineering approval, the applicant shall submit soil borings at the proposed retention basin to verify existing soil types and groundwater elevation. The applicant will need to apply for and obtain several permits (SESC, KCRC, MDEQ, water and sanitary sewer from the City) prior to construction.

If you have any questions or require additional information, please contact me at 616.464.3786 or nrtorrey@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, appearing to read "N. Torrey", is positioned above the printed name.

Nathan R. Torrey, PE

jlk

Attachment

By email

cc: Michael L. Berrevoets, PE – FTCH

Cascade Charter Township

Storm Water Ordinance, Ordinance 7 of 2002, as amended by Ordinance No. 2 of 2008, 5/14/2008

Reviewing Engineer Comments are Italicized

OK – Received and Acceptable

NA – Not Applicable

NR – Not Received, Needs Follow-up, See Comments

Lanterns

Drainage Plan Checklist

- OK (1) Location of the development site and water bodies that will receive storm water runoff
Stormwater runoff from the site will be collected and infiltrated in an onsite retention basin.

- OK (2) Existing and proposed topography of the development site, including the alignment and boundary of the natural drainage courses, with contours having a maximum interval of one foot (using USGS datum). The information shall be superimposed on the pertinent Kent County soil map
Existing and proposed contours have been provided. A geotechnical investigation and soil borings were performed.

- OK (3) Development tributary area to each point of discharge from the development.
The applicant provided drainage areas for sizing of the retention basin.

- OK (4) Calculations for the final peak discharge rates
The applicant provided calculations for sizing of the stormwater management system.

- OK (5) Calculations for any facility or structure size and configuration
The applicant provided calculations for sizing of the stormwater management system.

- OK (6) Drawing showing all proposed storm water runoff facilities with existing and final grades
The applicant provided plans showing all proposed storm water runoff facilities.

- OK (7) The sizes and locations of upstream and downstream culverts serving the major drainage routes flowing into and out of the development site. Any significant off-site and on-site drainage outlet restrictions other than culverts should be noted on the drainage map
The drainage plan identified an offsite drainage channel traversing the property from west to east.

- OK (8) An implementation plan for construction and inspection of all storm water runoff facilities necessary to the overall drainage plan, including a schedule of the estimated dates of completing construction of the storm water runoff facilities shown on the plan and an identification of the proposed inspection procedures to ensure that the storm water runoff facilities are constructed in accordance with the approved drainage plan
A construction schedule was included on the plans.

- OK (9) Plan to ensure the effective control of construction site storm water runoff and sediment track-out onto roadways
The SESC measures shown on the plan appear appropriate given the expected work. SESC falls under the review and approval of the KCRC and a permit is needed before construction can begin.

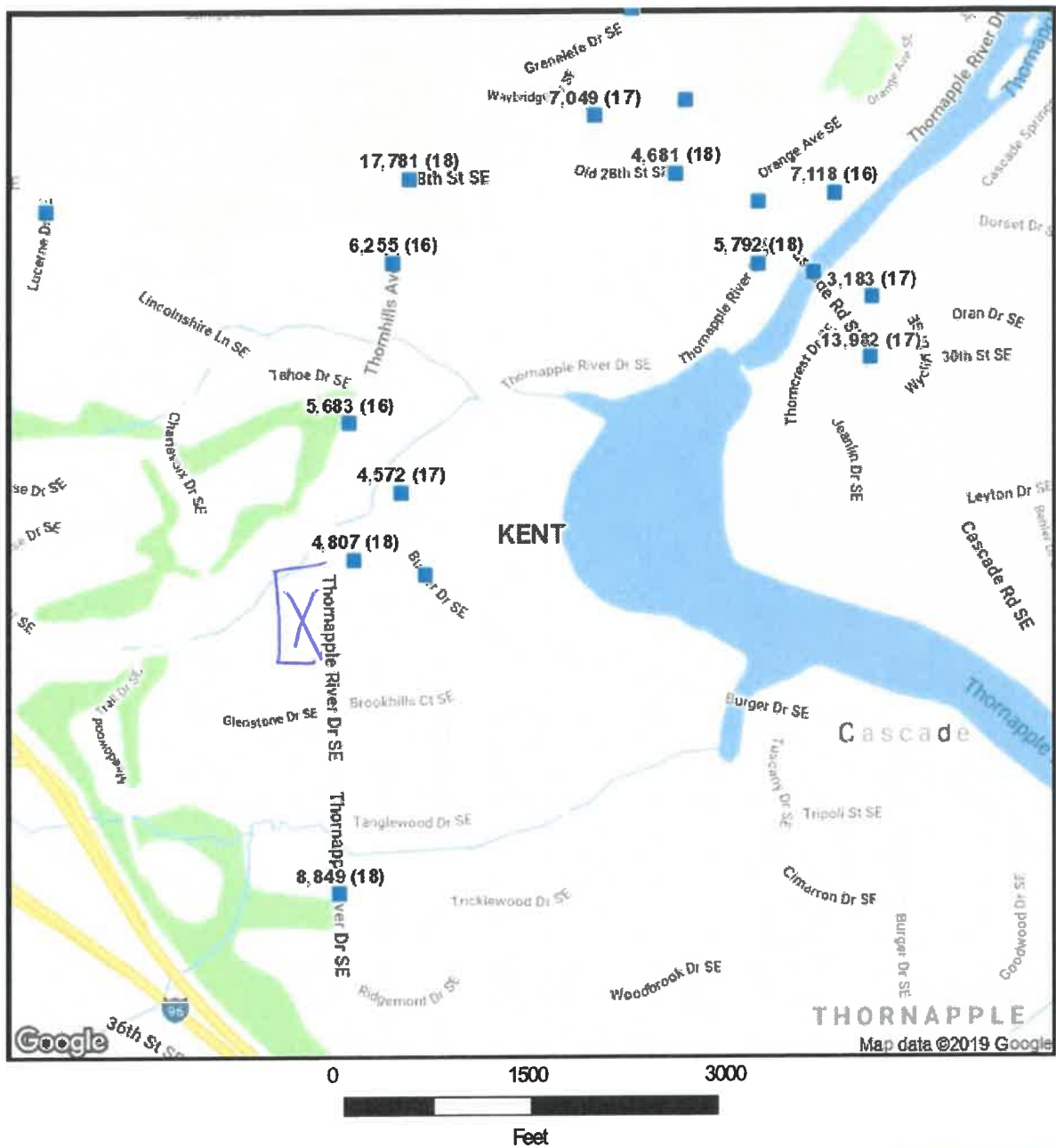
- OK (10) Drawings, profiles, and specifications for the construction of the storm water runoff facilities reasonably necessary to ensure that storm water runoff will be drained, stored, or otherwise controlled in accordance with this ordinance
The applicant provided a plan and design details for construction of the onsite drainage system.

- NR (11) Maintenance agreement, in form and substance acceptable to the Township, for ensuring maintenance of any privately owned storm water runoff facilities. The maintenance agreement shall include the developer's written commitment to provide routine, emergency, and long-term maintenance of the facilities and, in the event that the facilities are not maintained in accordance with the approved drainage plan, the agreement shall authorize the Township to maintain any on-site storm water runoff facility as reasonably necessary, at the developer's expense
Maintenance agreement was not provided and is required.

- OK (12) Name of the engineering firm and the registered professional engineer that designed the drainage plan and that will inspect final construction of the storm water runoff facilities

- NA (13) All design information must be compatible for conversion to Grand Valley Regional Geographic Information System (REGIS)
This is a privately owned system and will not be uploaded to REGIS.

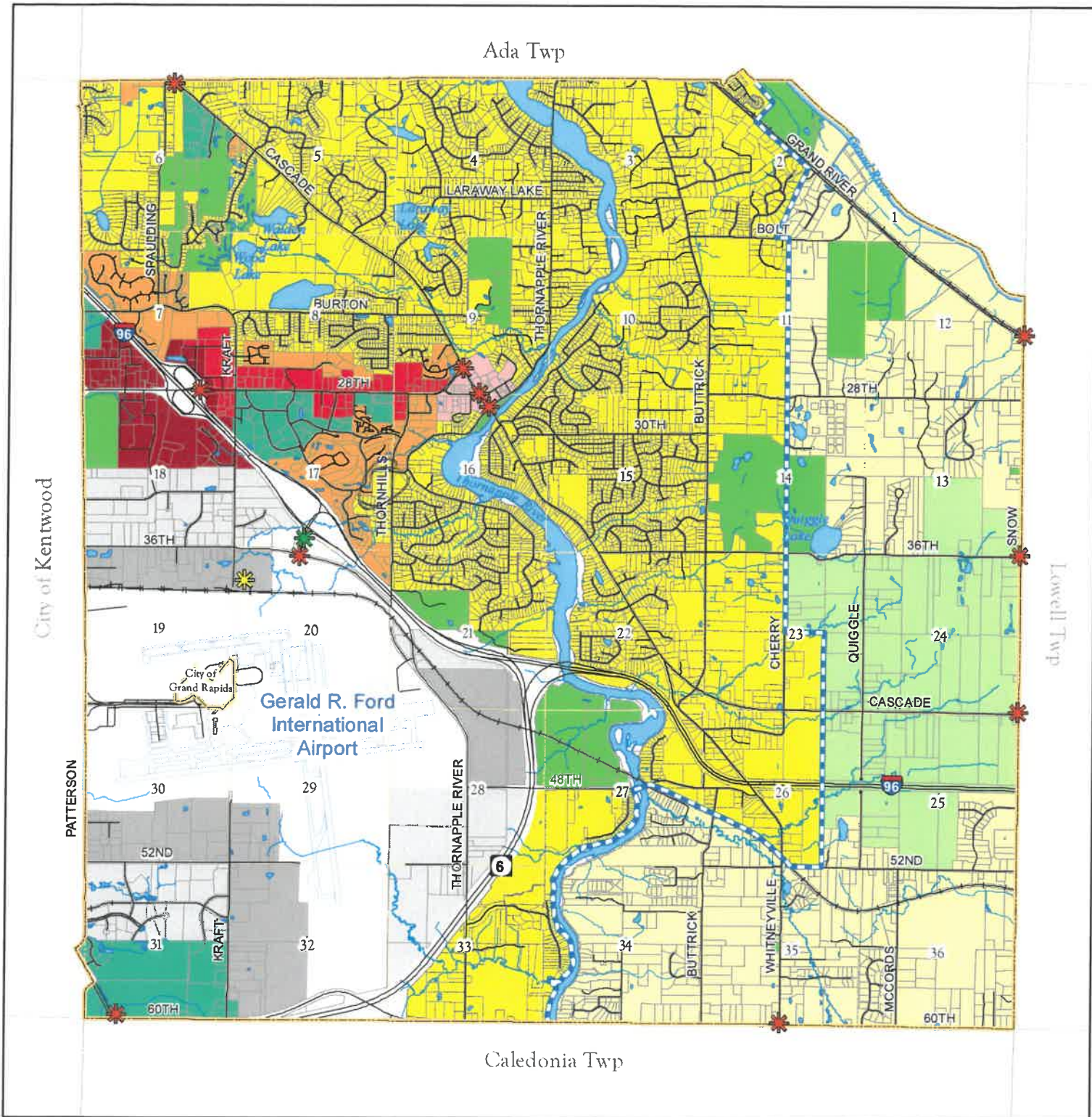
- OK (14) Other information necessary for the Township to verify that the drainage plan complies with the Township's design and performance standards for drains and storm water management systems



- TCDS Locations**
- Short
 - Continuous
 - WMM
 - Located Short
 - Located Continuous
 - Located WMM



2/14/2019



Cascade Charter
Township
Kent County, Michigan

Map 15
Future Land Use

Legend

- Gateway Feature
- Park 'n' Ride
- Rail Station
- Utility Service Area
- Farmland Preservation
- Rural Residential
- Suburban Residential
- Community Residential
- Village Commercial
- General Commercial
- Highway Commercial
- Mixed Use
- Heavy Industrial
- Light Industrial
- Community Facility / Golf Course



© 2004 REGIS All Rights Reserved
This map does not represent a legal document. It is intended to serve as a guide to graphic representation only. Information shown on this map is not intended for accuracy and should be verified through other means. Any application to be recorded or to be used in any way is subject to the Eminent Domain Act, Public Records Act, PA 412 of 1976, as amended.

Williams & Works
ENGINEERS, ARCHITECTS AND PLANNERS

414.234.1300 phone • 414.234.1581 fax
589 Osage Avenue NW • Grand Rapids, MI 49503

April 22, 2009

have been identified in the Natural Features Inventory. Subdivisions and site condominiums should be allowed as a special land use, with standards in place to ensure adequate buffering, preservation of open space, deep setbacks from roadways, and preservation of natural features as identified in the Natural Features Inventory.



SUBURBAN RESIDENTIAL

Description: A significant portion of the Township has been developed as suburban style single family residential neighborhoods as a result of historic planning efforts by the Township. These communities are relatively homogeneous in form and land uses, scaled primarily for passenger car travel and developed primarily for families with small and school-age children. New suburban residential areas should incorporate pedestrian access connecting cul-de-sac subdivisions to the Township's non-motorized trail system, when available or planned. New development within the suburban residential areas should also provide an internal trail or sidewalk system to encourage walking, biking, and healthy neighborhoods.

Location: The suburban residential land use category is located in the central portion of the Township and within the utility service boundary.

Desired Uses and Densities: The primary land use within this area will be single family homes developed in subdivisions or site condominiums on lots ranging from 1/3 acre to 1 acre (i.e. 1 to 3 dwelling units per acre) or in conservation clusters that result in the preservation of significant open lands and overall densities of 3 or more dwelling units per acre. The Township should explore different tools that will provide for the extension of utilities as the result of new development. Such tools may include requiring utility extensions when existing utilities are close by, allowing options for developers to choose from in those areas that are further out but still inside the utility boundary, and other tools with the goal of increasing the number of homes connected to municipal water and sewer helping to maintain quality ground water supplies and encourage sequential development within the utility boundary. Traffic patterns will be established to safely move vehicles through local streets to connectors and to arterials while minimizing vehicle/pedestrian conflicts. A network of pedestrian and bike trails, sidewalks, clear pedestrian crossings and traffic calming techniques will be utilized to promote safe non-motorized and motorized transportation. The neighborhood character will also be enhanced with sidewalks, street trees and street lights. In addition to single family homes, suburban residential neighborhoods may include schools, neighborhood parks, churches and similar uses that support quality residential neighborhoods. Police and fire service to these

neighborhoods is a primary concern and measures should be taken periodically to assure proper coverage of these services. Private roads should be considered under certain circumstances, such as for the preservation of large stands of trees, or to preserve steep slopes, where drainage and run-off is a concern, or where important natural features have been identified in the Natural Feature Inventory.

COMMUNITY RESIDENTIAL

Description: The community residential land use designation is intended for attached or detached single family and multi-family housing. A project should be designed and developed to provide attractive, up-scale master planned living environments with amenities such as open spaces, walking paths, street trees, street lighting and attractive architectural style. Buildings and structures should be designed to minimize bulk and massing of attached living units.

Location: The community residential land use area primarily serves as a transition from commercial/mixed use and suburban residential uses along 28th Street. However, there are two areas where this use is proposed along the south side of Cascade Road north of Burton.

Desired Uses and Densities: Uses may include attached and detached residential dwellings, including projects that incorporate a variety of housing options, as well as assisted living and retirement communities. Master-planned retirement communities may also incorporate low-impact commercial uses internal and integrated within the development such as personal service establishments (barber shop or hair salon), post office, financial institution and other necessary uses for the convenience of the residents but not available for use by the general public. Development within the community residential area should include a walking system that connects to any existing or planned non-motorized pathway. The Township desires for the community residential areas to be served by mass transit in the future. Water and sewer must be available for new development or redevelopment in this land use category. Additionally, any natural features should be preserved and protected in projects located in the community residential land use area. Only public roads would be permitted in the community residential land use category. Allowable densities would range between 4-6 dwelling units to the acre.

VILLAGE COMMERCIAL

Description: This land use designation is intended to foster a pedestrian-scale, local shopping district confined to the parcels currently zoned for commercial use. It is not the intent of this land use plan to expand commercial uses either north or south along Cascade Road.



CASCADE CHARTER TOWNSHIP

2865 Thornhills SE Grand Rapids, Michigan
49546-7140

PLANNING & ZONING APPLICATION

APPLICANT: Name: DDSBBBS Group, LLC Attn: Douglas DeHaan
Address: 3299 Hudson Trails Drive
City & Zip Code: Hudsonville, MI 49426
Telephone: 616-896-8300
Email Address: ddehaan@dehaanhomes.com

OWNER: * (if different from Applicant)
Name: _____
Address: _____
City & Zip Code: _____
Telephone: _____
Email Address: _____

NATURE OF THE REQUEST: (Please check the appropriate box or boxes)	
<input type="checkbox"/> Administrative Appeal	<input type="checkbox"/> Administrative Site Plan Review
<input type="checkbox"/> Deferred Parking	<input checked="" type="checkbox"/> P.U.D. – Rezoning *
<input type="checkbox"/> P.U.D. – Site Condominium *	<input type="checkbox"/> Rezoning
<input type="checkbox"/> Site Plan Review *	<input type="checkbox"/> Sign Variance
<input type="checkbox"/> Special Use Permit	<input type="checkbox"/> Subdivision Plat Review *
<input type="checkbox"/> Zoning Variance	<input type="checkbox"/> Other: _____ *

** Requires an initial submission of 5 copies of the completed site plan*

BRIEFLY DESCRIBE YOUR REQUEST:**
Proposed 21-unit Villa Condominium development

{**Use Attachments if Necessary}
-SEE OTHER SIDE-

LEGAL DESCRIPTION OF PROPERTY:**

See site plan

(**Use Attachments if Necessary)

PERMANENT PARCEL (TAX) NUMBER: 41-19 17-427-004

ADDRESS OF PROPERTY: 3217 Thornapple River Drive

PRESENT USE OF THE PROPERTY: Single Family Homes

NAME(S) & ADDRESS(ES) OF ALL OTHER PERSONS, CORPORATIONS, OR FIRMS HAVING A LEGAL OR EQUITABLE INTEREST IN THE PROPERTY:

Name(s)

Address(es)

SIGNATURES


I (we) the undersigned certify that the information contained on this application form and the required documents attached hereto are to the best of my (our) knowledge true and accurate. I (we) also agree to reimburse the Cascade Charter Township for all costs, including consultant costs, to review this request in a timely manner. I (we) understand that these costs may also include administrative reviews which may occur after the Township has taken action on my (our) request.

I (we) the undersigned also acknowledge that the proposed project does not violate any known property restrictions (i.e. plat restrictions, deed restrictions, covenants, etc.)

DOUGLAS A. DELMONTE
Owner – Print or Type Name
(*If different from Applicant)

MEMBER
DDSBOLLE

Applicant – Print or Type Name

* 
Owner's Signature & Date
(*If different from Applicant)

Applicant's Signature & Date

PLEASE ATTACH ALL REQUIRED DOCUMENTS NOTED IN THE PROCESS REVIEW SHEET – THANK YOU



Lanterns of Cascade



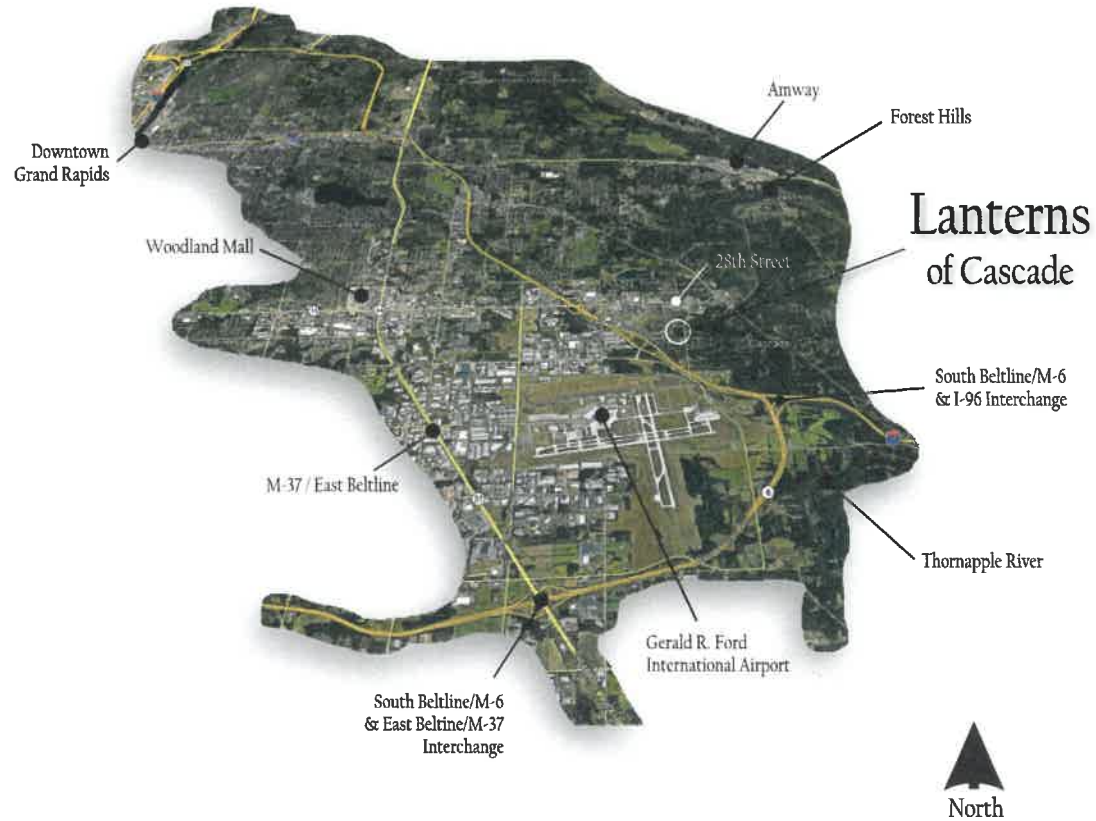
ISSUANCE		DESCRIPTION		APPLICATION		FOR FID	
1.	DATE	2.	2/04/19	3.		4.	

Lanterns
of Cascade



Table of Contents:

1.	Project Location - Area Map	Sheet 1
	A. Introduction	
	B. Application	
2.	Project	
	A. Narrative	Sheet 2-3
	B. Schedule	Sheet 4
3.	Alternative Site Layouts	
	A. Base Density Plan	Sheet 5
	B. Initial PUD Site Layout	Sheet 6
4.	Civil Engineering Documentation	
	A. Site Dimension & Layout Plan w/ Map	Sheet 7
	B. Site Dimension & Layout Plan	Sheet 7A
	C. Utility Plan	Sheet 8
	D. Site Grading Plan	Sheet 9
	E. Lighting Plan Opt 1	Sheet 10
	1) Opt 1 Lighting Spec Sheets	
	F. Lighting Plan Opt 2	Sheet 11
	1) Opt 2 Lighting Spec Sheets	
5.	Landscaping Plan	
	A. Site Clearing & Landscape	Sheet 12
	B. Master Site Landscape Plan	Sheet 13
	C. Enlarged Entry Landscape Plan	Sheet 14
	D. Individual Unit Landscape Plan	Sheet 15
6.	Entrance Detail	
	A. Entrance Pavilion & Typical Gas Lantern Detail	Sheet 16
	B. Street Signage Detail	Sheet 17
7.	Residential Home Designs	
	A. Plan A	Sheet 18-19
	B. Plan B	Sheet 20-21
	C. Plan C	Sheet 22-23
8.	Support & Legal Documentation	Sheet 24
	A. Warranty Deed	
	B. Heathmoor Condo Easement Email	
	C. Condo Documentation / Master Deed	
	D. Exhibit A to Master Deed	



DATE	ISSUED FOR DESCRIPTION FOR PUD
1. 2.04.19	
2.	
3.	
4.	
5.	
6.	

Lanterns of Cascade



Section 1 - Project Location & Area Map

SHEET
1

Section 16.02 Intent:

This Chapter provides enabling authority and standards for the submission, review and approval of applications for Planned Unit Developments. It is the intent of this Chapter to authorize the consideration and use of Planned Unit Development Regulations for the following purposes:

1. To encourage the use of land in accordance with its character and adaptability.
2. To promote the conservation of natural features and resources.
3. To encourage innovation in land use planning and development.
4. To promote the enhancement of housing, employment, shopping, traffic circulation and recreational opportunities for the people of the Township.
5. To promote and ensure greater compatibility of design and use between neighboring properties.
6. To provide for the regulation of legal land uses not otherwise authorized within this Ordinance.

Goal:

The Master Plan of Cascade Township for this property is located within the R-2 zoning district. We have provided a parallel plan to demonstrate a unit count that complies with the current zoning for R-2. We are submitting an innovative plan that thoughtfully considers the topography of the property, complies with the initial unit count, respects the natural grades to the north, while utilizing the upland property for more manageable grades for our product type and the efficient use of utilities. This property can only be developed with this design, under the flexibility of the Planned Unit Development allowed by the Cascade Township Planning Commission within the Township Ordinances.

Target Market:

Think of a bell curve.....

The top of the bell curve are the active adults in the third quarter of life.... looking to invest in more than one home, have additional investment income, and travel at will.

We need to create a vibrant single-family residential living environment that integrates the lifestyle needs of owners that desire a high-quality neighborhood that demonstrates unique design, provides low maintenance and well-maintained housing, all set in a natural environment – just minutes from shopping, highways, and an International airport.

Vision:

Careful attention to site design - studying the topography- to creating the *art* of a village... integrated on a quaint circulation drive, with unique building architecture – that is themed with natural gas “Lanterns”

Along with the *science* of thoughtful engineering of the property to maintain preserved dedicated natural areas while balancing the efficient distribution of public utilities.

History:

The property has been owned by the Woods Family for over 50 years. Approached by many a developer who attempted to “over develop” the property with high density projects. The owners were approached some 30 years ago by a local insurance company, which eventually developed around the property, as the Woods family would not sell or allow access, nor share public utilities on their property. During our “due diligence” we were able to research the property, obtain a Phase 1 environmental and review existing utilities.

We found that water service, natural gas and electric were available to the site. Sanitary sewer was not serviced to this property and storm water management needed to be designed and developed.

Based on initial investigation of utilities available around the site, a public sanitary sewer line was located just 10' off the property line to the northwest within the Heathmoor Condominium property. This sewer line, with initial engineering research, had been adequately sized for the Woods parcel, but had been designed and installed without an easement to access or service this utility from their property. Seems as though the strategy was in place for a future purchase by the insurance company.

We reached out to the Heathmoor Condominium owners and their board to generate a meeting. We requested an easement to the sewer invert located just 10' to their easement, located on their property. We shared an initial layout that demonstrated 2 entries off Thornapple River drive with 21 free standing units.

It gets more interesting:

- The Board at Heathmoor Condominiums have a few familiar faces, which in this industry is a relief..... we immediately began a friendly dialogue of how we could work together
- Our real estate counsel, represented Foremost Insurance 30 years ago during the attempt to acquire Woods Property, understood the easement situation as they developed the Heathmoor Condominiums
- Our engineer, Exxel Engineering, was part if the team that designed the infrastructure for the adjacent Heathmoor Condominiums.

The condominium association and board were in agreement to grant access to the sewer utility with and grant an easement with stipulations. We reached the following terms:

- Not to connect the developments to avoid potential traffic and additional noise for both developments. Traffic has doubled since the recent apartment complex was built on Charlevoix Drive.
- Maintain brands and individual identities of condominium developments – do not mix or confuse the developments
- Buffer zone on property edge – leave existing vegetation
- Provide landscape screening along shared property line
- Connect water main /loop for pressure to benefit both developments
- Remove the unsightly fencing owned by Woods family
- Provide a snow storage easement on the Woods property for the Heathmoor Condominiums to provide relief and increase the access to existing fire hydrant in winter months.
- Provide permanent easement for storm water runoff that continues through this property from retention pond at Heathmoor property – manage and repair existing culvert.



1. DATE	ISSUED FOR	DESCRIPTION	REVISION	BY	DATE





SHEET
2

Strategy:

Understanding our neighbors and their home types help us define our product line and deliverable:

- Heathmoor Condominiums border both our westerly and northern property lines, they have a combination of single and duplex units. We plan to plant several mature evergreens along the property line to share a common buffer.
- Thornapple Estates, our neighbors to the south, are higher end – single-family, custom-built homes. There is a total of 5 properties that border the Woods property and all currently maintain a ~ 60' buffer of trees to the shared property line. Our plan is to plant large pine trees along our southern property line and landscape outside each unit to preserve privacy for our owners and help buffer the neighbors to our south.
- The “former” Woods property – as it sits today, consists of two very old homes that are set for demolition – one is nearly condemned. The removal of these 2 homes, one old barn and free-standing garage – which allows for a community/village to be built with their removal.
- Thornapple Community Church resides east of Thornapple River Drive as a commercial property

Thoughtful Engineering of the site:

Location on the property:

Engineering the development on the upland portion of land accomplishes the following goals:

- Uses existing cleared land that former homes, barn, and accessory building (garage) had already occupied.
- Creates a safe entry at the crest of Thornapple River drive – directly across from the Thornapple Community church – in accordance with Kent County Road commission’s recommendation for entry, access and safety – to obtain approvals.
- Allows for a de-acceleration lane into development off Thornapple River Drive – (currently it is 45MPH at proposed entry into development)
- Provides ease of City of Grand Rapids water connection through development to water service main located at street end of Heathmoor condominiums – looping lines for redundancy and water quality improvements for all properties.
- Allows for zero step design for “active adult/age in place lifestyle” for owners that will purchase condominiums – our site topography also allows for future finish if needed with daylight or walkout sites (for additional living space or storage)
- Allows for minimal grades on circulation drive – easy to navigate for owners
- Eliminates “hard corners” on shared drive – traffic flows smoothly through development – ease of circulation
- Allows for opportunity for street lighting and street furnishings within development
- Maintains nearly 3 acres of green space preserving existing vegetation – allowing natural habitat for wildlife
- Maintains storm water drain from Heathmoor Condominium Association through natural valley on property – promoting best management practices for storm drainage for neighbors and our new development
- Minimizes additional surface parking area that artfully blend into development – view-scape of additional parking is minimized by evergreen landscaping
- Ease of maintenance of front yard lawns for owners with minimal grade elevations to home entries

Circulation Drive within the property:

The drive creates a unique space that provides a distinct sense of place within this wooded site. A typical/conventional grid pattern design would not allow the creative use and benefits of the property or respect the topography it renders. The innovation of the drive design allows a flowing park like feel to this village/community and spaciouly allows 21 free standing units.

Even though the private drive width (18' - excluding the blacktop valley gutter) allows for two-way traffic per the township private drive standards, the intent for this development is to provide for one-way traffic.

One-way drives are proven to be safer as traffic is slower, (15 MPH), and for the owners that now depend on a traffic pattern that is predictable while backing out of their unit driveways.

Entry Statement to welcome owner to the property:

The entry will showcase an architectural element or amenity “the pavilion” provides a design aesthetic and shelter.

- The entry statement “pavilion” will showcase the first of many “gas lanterns” as one enters the development, all association owned and maintained. This element connects to pedestrian paths or walkways, creates a sense of space and destination while reinforcing community and social interaction.
- This structure has a utilitarian purpose as well:
 - It will house electrical services for entry lighting and water metering devices for entry signage and landscaping

Designing product to fit our buyer:

Our market research and understanding our current property neighbors – we plan to create Condominium “homes” - single family dwellings with front and rear porches, two or three stall garages, with a variety of elevations to produce a “village” fitting well between custom homes to our south and multiunit – attached condominiums- to our west and north, all while sitting across the street from commercial building with large parking areas.

In a recent trade publication, it was circulated that 73% of all new homes built in the next 7 years will service the 54 active adult market. We intend to help fill this need and build a quality, association-maintained, community of homes in the Cascade market place.

New homes cost 15% more than existing homes – but in a recent survey we conducted in another similar project, most buyers feel it is worth it. Why new versus used? Its just like a car.

Our clientele like the ability to:

- Choose the finishes, fixtures and interiors.
- Obtain a builder warranty
- White glove service program – procurement of our product after the sale
- Cutting edge design and architecture – understanding buyers need for updated - open floor plans
- Latest home automation – great for the second home buyer who manages their real estate from a smart phone
- Energy efficient heating, cooling and venting solutions on the market to reduce monthly fixed costs
- Newest insulation available to lower energy bills
- Ease of use.... low maintenance – lower retainage fees for association owners

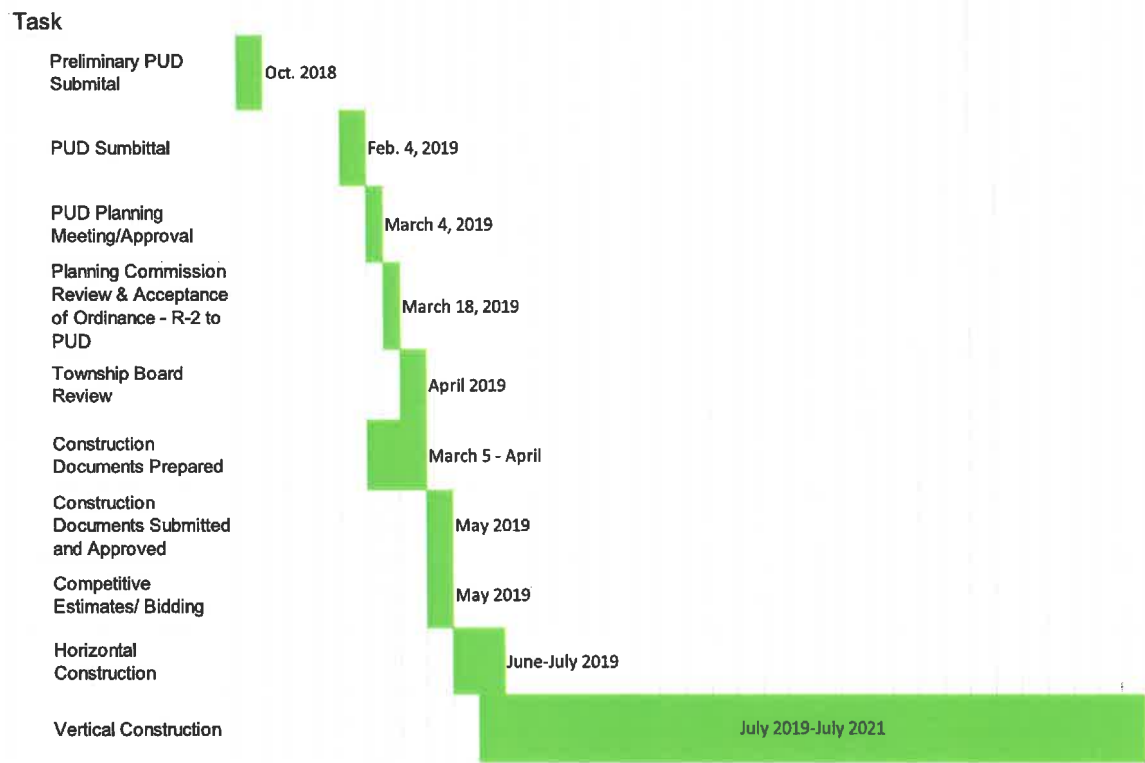


ISSUED FOR		DESCRIPTION	DATE	BY	NO.
DATE	DESCRIPTION				
1.	2/04/19				
2.					
3.					
4.					
5.					
6.					

Lanterns
of Cascade



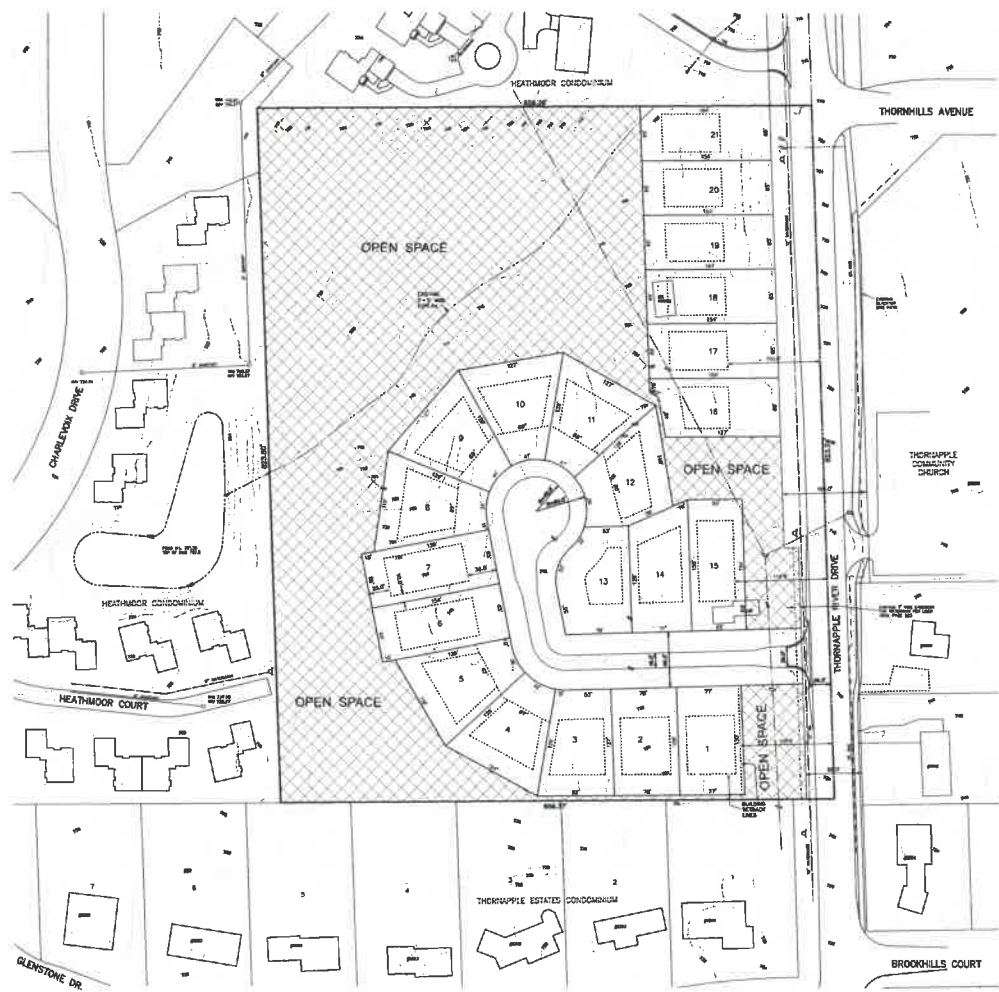
The Lanterns Proposed Development Schedule



ISSUED FOR	DESCRIPTION	DATE	BY
1.	DATE	2 04 19	3
2.	DATE	3	4
3.	DATE	4	5
4.	DATE	5	6

Lanterns
of Cascade

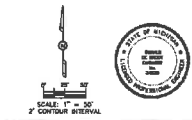




- GENERAL NOTES:**
- PROPERTY INFORMATION:**
 - PROPERTY DESCRIPTION: THE EAST ONE-QUARTER OF THE NORTH ONE-HALF OF THE NORTH ONE-HALF OF THE SOUTH-EAST ONE-QUARTER OF SECTION 17, TOWN 4 NORTH, RANGE 10 WEST, CASCADE TOWNSHIP, FORT COCKER, WISCONSIN.
 - PROPERTY ADDRESS: 3217 THORRAPPLE RIVER DRIVE.
 - PARCELS SIZE: ± 17.46 ACRES (PLAT ACRES DECL. 8/1/10).
 - MAPING:**
 - BOUNDARY INFORMATION BASED ON ALTA SURVEY PREPARED BY MOORE & SPILLING, FEB. 1, 2011.
 - EXISTING OR QUAD: CONTOURS AND TOPOGRAPHICAL FEATURES BASED AVAILABLE RECENT COUNTY GIS DATA.
 - EXISTING UTILITY AND ADJACENCIES BASED ON AVAILABLE RECORDS.
 - EXISTING ZONING: R-3 RESIDENTIAL.**
 - DIMENSIONAL REQUIREMENTS PER TABLE 6.3 OF CASCADE TOWNSHIP SUBDIVISION ORDINANCE:**
 - MINIMUM BUILDING SETBACKS:
 - FRONT = 30'
 - SIDE = 10'
 - REAR = 10'
 - FROM CL THORRAPPLE RIVER DRIVE = 10'
 - MINIMUM LOT SIZE = 10,000 SQ. FT. (MIN. OPEN SPACE)
 - MINIMUM LOT WIDTH = 60' (MIN. 60% OPEN SPACE)
 - PRESCRIBED OPEN SPACE = 11.83 ± 0.5 ± 8.62 ACRES
 - BASE DENSITY PLAN SUMMARY:**
 - WITH SITE CONDO UNITS
 - MINIMUM LOT SIZE = 10,000 SQ. FT.
 - OPEN SPACE PROVIDED = 8.62 ACRES (EXCLUDES STREAM)
 - PRIVATE STREET SERVING CASCADE TOWNSHIP PRIVATE STREET REQUIREMENTS

SITE CONDO UNIT SIZE TABLE

Area		Area	
Lot No.	Sq. Ft.	Lot No.	Sq. Ft.
1	10000	12	10000
2	10000	13	10000
3	10000	14	10000
4	10000	15	10000
5	10000	16	10000
6	10000	17	10000
7	10000	18	10000
8	10000	19	10000
9	10000	20	10000
10	10000	21	10000
11	10000		



BASE DENSITY PLAN
LANTERNS RE: 3217 THORRAPPLE RIVER DRIVE

FOR: JOHNSON GROUP, LLC
 ATTN: DOUGLAS DELAAN
 3283 MADISON TRAILS DRIVE
 MADISONVILLE, MI 48428

DC: PART OF THE SE 1/4, SECTION 17, TOWN 4 NORTH, RANGE 10 WEST, CASCADE TOWNSHIP, FORT COCKER, WISCONSIN

excel engineering, inc.
 2011 Cass Ave. S.W., Grand Rapids, MI 49508
 Phone: 616-941-1111 Fax: 616-941-1112

DATE: 10/20/11
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 SHEET: 2 of 2



1.	DATE	ISSUED FOR	DESCRIPTION	BY
2.	10/19/11	FOR PERMIT		
3.				
4.				
5.				
6.				

Lanterns
of Cascade



Section 3 - Base Density Site Plan



- GENERAL NOTES:**
1. PROPERTY INFORMATION:
 A) PROPERTY DESCRIPTION: THE EAST ONE QUARTER OF THE NORTH FIVE EIGHTS OF THE NORTH ONE-HALF OF THE SOUTHEAST ONE-QUARTER OF SECTION 17, TOWNSHIP NORTH, RANGE 14 WEST, CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN.
 B) SUPERSEDED ADDRESS: 3217 THORNHILLS RIVER DRIVE 6L.
 C) PARCEL SIZE = 1.82 ACRES (174,100 SQ. FT.).
 2. SURVEY:
 A) SURVEY INFORMATION BASED ON ALTA SURVEY PREPARED BY MOORE & BRADSON, FEB. 6, 1974.
 B) EXISTING GROUND CONTOURS AND TOPOGRAPHICAL FEATURES BASED ON AN ALTA KENT COUNTY 600 DATA.
 C) EXISTING UTILITY AND ADJACENCIES BASED ON AVAILABLE RECORDS.
 3. EXISTING ZONING: R-4 RESIDENTIAL.
 PROPOSED ZONING: PUD.
 4. PROPOSED LAND USE CLASSIFICATION:
 A) PUD CONDOMINIUM PER CASCADE TOWNSHIP ZONING ORDINANCE CHAPTER 18, PUD DISTRICT.
 B) ALLOWABLE DENSITY: 21 UNITS PER BASE DENSITY PLAN.
 C) OPEN SPACE CALCULATION:
 DEVELOPABLE AREA = 1,820 AC.
 OPEN SPACE PROVIDED = 6,800 AC. + 0.00% (EXCLUDES STREAM)
 5. PROPOSED REGULATORY REQUIREMENTS:
 A) MINIMUM DISTANCE BETWEEN BUILDINGS = 20'.
 B) SETBACK FROM PRIVATE DRIVE'S BARRIERS = 4' (OVERSEEN WALKWAYS).
 C) FRONT OF GARAGE TO SIDE OF DRIVEWAY = 20'.
 D) FRONT OF THORNHILLS RIVER DRIVE = 110'.
 E) MINIMUM DISTANCE FROM EXISTING BOUNDARY = 20'.
 6. PROPOSED IMPROVEMENTS:
 A) PRIVATE STREET DRIVE WHO WILL BE CONSTRUCTED TO MEET THE STANDARDS OF THE TOWNSHIP ZONING ORDINANCE.
 B) MAINTENANCE AND WATERMAIN WILL BE EXTENDED AS SHOWN ON THE PLAN. CONSTRUCTION WILL COME FROM THE CITY OF GRAND RAPIDS REQUIREMENTS.
 C) UTILITIES INSTALLMENT WILL BE DESIGNED TO CONFORM TO THE TOWNSHIP STORMWATER ORDINANCE.
 D) POWER, GAS AND COMMUNICATION LINES WILL BE INSTALLED UNDERGROUND.
 E) IF ANY UTILITIES ARE TO BE CONSTRUCTED FROM THE NORTH PROPERTY LINE TO THE NORTH EDGE OF THE SOUTH (WEST) DRIVE.
 F) APPROPRIATE ORIENTED LIGHTING, LANDSCAPING AND SIGNAGE WILL BE PROVIDED FOR THE DEVELOPMENT. DETAILS TO BE PROVIDED BY SUBSEQUENT SUBMITTALS.

PROPOSED UTILITY LEGEND

- REPRESENTS PROPOSED 12" WATER MAIN
- REPRESENTS PROPOSED 8" GAS MAIN
- REPRESENTS PROPOSED STORM SEWER

SCALE: 1" = 50'
 2" CONTOUR INTERVAL

LOCATION MAP

**PUD CONDOMINIUM PLAN
 LANTERNS** RE: 3217 THORNHILLS RIVER DRIVE

FOR: KENNEDY GROUP, LLC
 ATTN: DOUGLAS DEHAAN
 3243 MEDISON TRAILS DRIVE
 HUNTSVILLE, MI 49426

RE: PART OF THE SE 1/4, SECTION 17, T8N, R10W,
 CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN

DeHaan Homes

See Engineering, Inc.
 10000 W. 100th St., Suite 100
 Grand Rapids, MI 49508
 Phone: 616-221-1100
 www.seeengineering.com

APPROVED BY: [Signature] DATE: 11/15/19 SHEET 1 OF 2

IMAGIteffects
 LIFESTYLE DESIGN

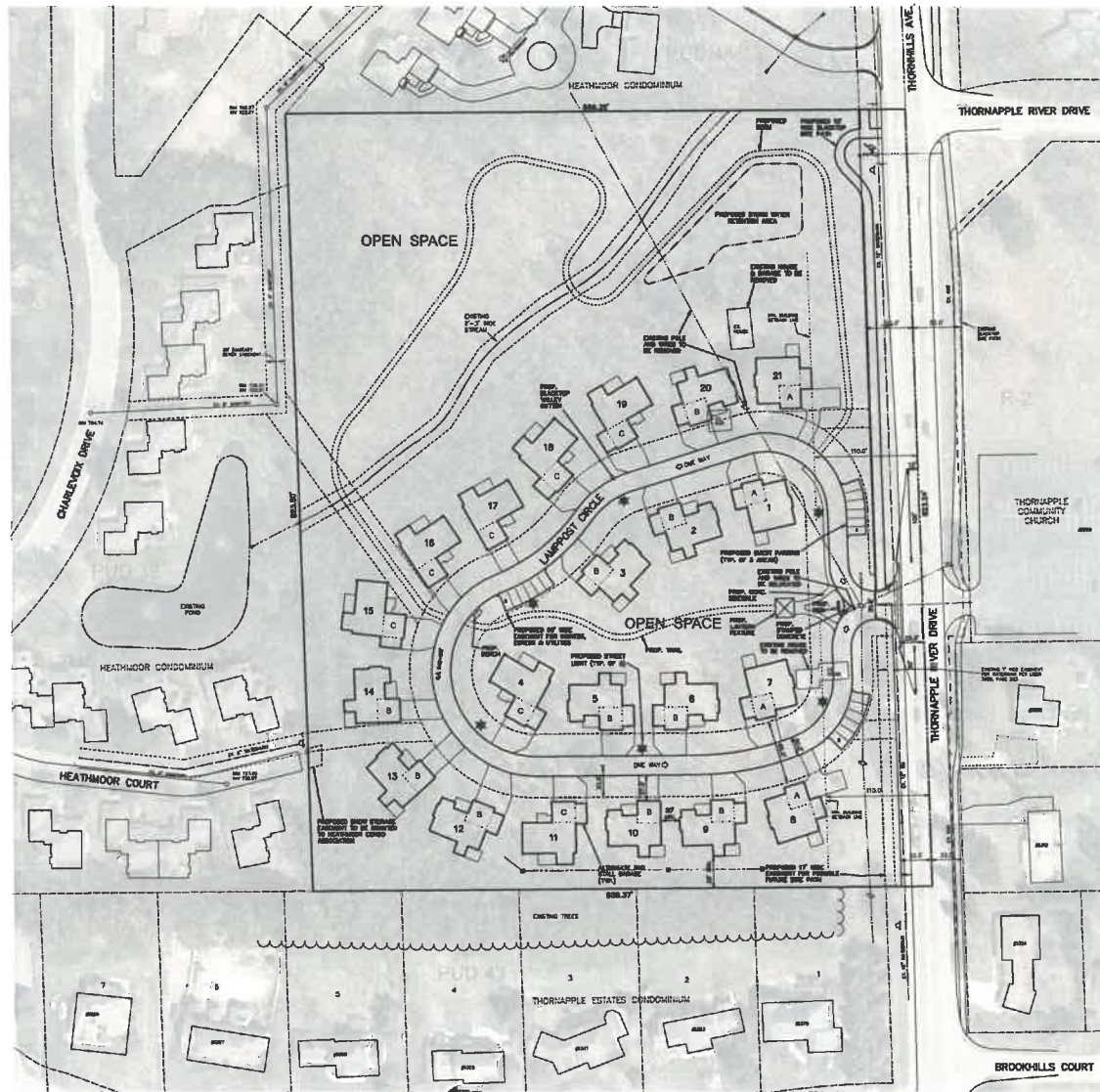
NO.	DATE	DESCRIPTION
1.	2/24/19	APPLICATION FOR PUD
2.		
3.		
4.		
5.		
6.		

Lanterns
 of Cascade

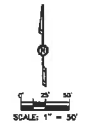
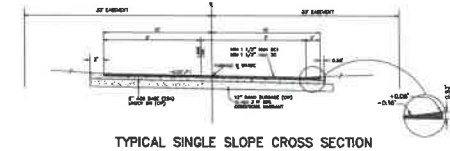
DEHAAN HOMES

SHEET **6**

Section 3 - Initial Site Design Layout



- GENERAL NOTES:**
- PROPERTY INFORMATION:**
 - PROPERTY DESCRIPTION: THE EAST ONE-QUARTER OF THE NORTH FIVE-EIGHTHS OF THE NORTH ONE-HALF OF THE SOUTHWEST ONE-QUARTER OF SECTION 17, TOWN 4 NORTH, RANGE 16 WEST, CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN.
 - PROPERTY ADDRESS: 3217 THORNAPPLE RIVER DRIVE SE.
 - PARCEL SIZE: 12.8 ACRES (11.63 ACRES EXCL. HWY)
 - MAPS:**
 - BOUNDARY INFORMATION BASED ON ALTA SURVEY PREPARED BY MOORE & BRUSCONI, FEB. 6, 1974.
 - EXISTING GROUND CONTOUR AND TOPOGRAPHICAL FEATURES BASED AVAILABLE KENT COUNTY GIS DATA.
 - EXISTING UTILITY INFORMATION SHOWN BASED ON AVAILABLE RECORDS.
 - EXISTING ZONING: R-2 RESIDENTIAL, PROPOSED ZONING: PUD**
 - PROPOSED LAND USE SUMMARY:**
 - 31 UNIT CONDOMINIUM PER CASCADE TOWNSHIP ZONING ORDINANCE CHAPTER 16, PUD DISTRICT.
 - ALL CHANGE DISTRICTS 21 UNITS PER BASE DENSITY PLAN.
 - OPEN SPACE CALCULATION:
 - DEVELOPABLE AREA = 11.85 AC.
 - OPEN SPACE PROVIDED = 6.07 AC. = 51.7% (EXCLUDES STREAM)
 - PROPOSED DIMENSIONAL REQUIREMENTS:**
 - MINIMUM DISTANCE BETWEEN BUILDINGS = 20'
 - SETBACK FROM PRIVATE DRIVE EASEMENT = 4' (NEVER FROM R-2 FRONT SETBACK REQUESTED)
 - FRONT OF GARAGE TO EDGE OF DRIVEWAY = 3'
 - FROM CL THORNAPPLE RIVER DRIVE = 110'
 - MINIMUM DISTANCE FROM OVERALL BOUNDARY = 20'
 - PROPOSED IMPROVEMENTS:**
 - PRIVATE STREET WILL BE CONSTRUCTED TO MEET THE STANDARDS OF THE TOWNSHIP ORDINANCE.
 - SANITARY AND WATERMAIN WILL BE EXTENDED AS SHOWN ON THE PLAN. CONSTRUCTION WILL CONFORM TO THE CITY OF GRAND RAPIDS REQUIREMENTS.
 - STORMWATER MANAGEMENT WILL BE DEGRADED TO CONFORM TO THE TOWNSHIP STORMWATER ORDINANCE.
 - POWER, GAS AND COMMUNICATION LINES WILL BE INSTALLED UNDERGROUND.
 - A 10' WIDE BIKE PATH WILL BE CONSTRUCTED FROM THE NORTH PROPERTY LINE TO THE NORTH EDGE OF THE SOUTH (EAST) DRIVE.
- APPROPRIATE LIGHTING, LANDSCAPING AND SIGNAGE WILL BE PROVIDED FOR THE DEVELOPMENT - SEE SEPARATE PLANS.**
- 7. THIS PROPOSED AND PLAN REQUESTS THE FOLLOWING DEVIATION FROM THE APPLICABLE ZONING REQUIREMENTS AND THE TOWNSHIP PRIVATE STREET ORDINANCE:**
- FRONT SETBACK FROM NEAR PRIVATE STREET EASEMENT - PER SECTION 110.6, TABLE 10-4, R-2, REQUIRES 20' TOTAL SETBACK BE TYPICAL FOR BOTH SIDES 20' BY EACH SIDE PER SECTION 104.6, TABLE 10-4, R-2 REQUIRES A TOTAL OF 20' FOR BOTH SIDES. PLEASE NOTE THAT THE REQUIREMENT BETWEEN LINES IS BEING MAINTAINED.
 - TOTAL NUMBER OF UNITS PROPOSED ON ONE ACCESS IS 21 UNITS. PER SECTION F OF THE TOWNSHIP PRIVATE STREET ORDINANCE, ACCESS TO 20 OR MORE UNITS REQUIRES 2 MEANS OF ACCESS.



SITE DIMENSION AND LAYOUT PLAN
LANTERNS OF CASCADE PUD RE: 3217 THORNAPPLE RIVER DRIVE

FOR: DOSSBS GROUP, LLC
 ATTN: DOUGLAS DEHAAN
 3203 WALDON TRAILS DRIVE
 HUDSONVILLE, MI 49428

IN: PART OF THE SE 1/4, SECTION 17, TBN. 410W,
 CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN

excel engineering, inc.
 planners • engineers • surveyors
 525 CANTON PL., S.E. • Grand Rapids, MI 49508
 Phone: 616-941-2000 • www.exceleng.com

DRAWN BY: JRM CHECKED BY: EDD SHEET: 1 of 3
 APPROVED BY: DDG PROJECT NO: 14-0304

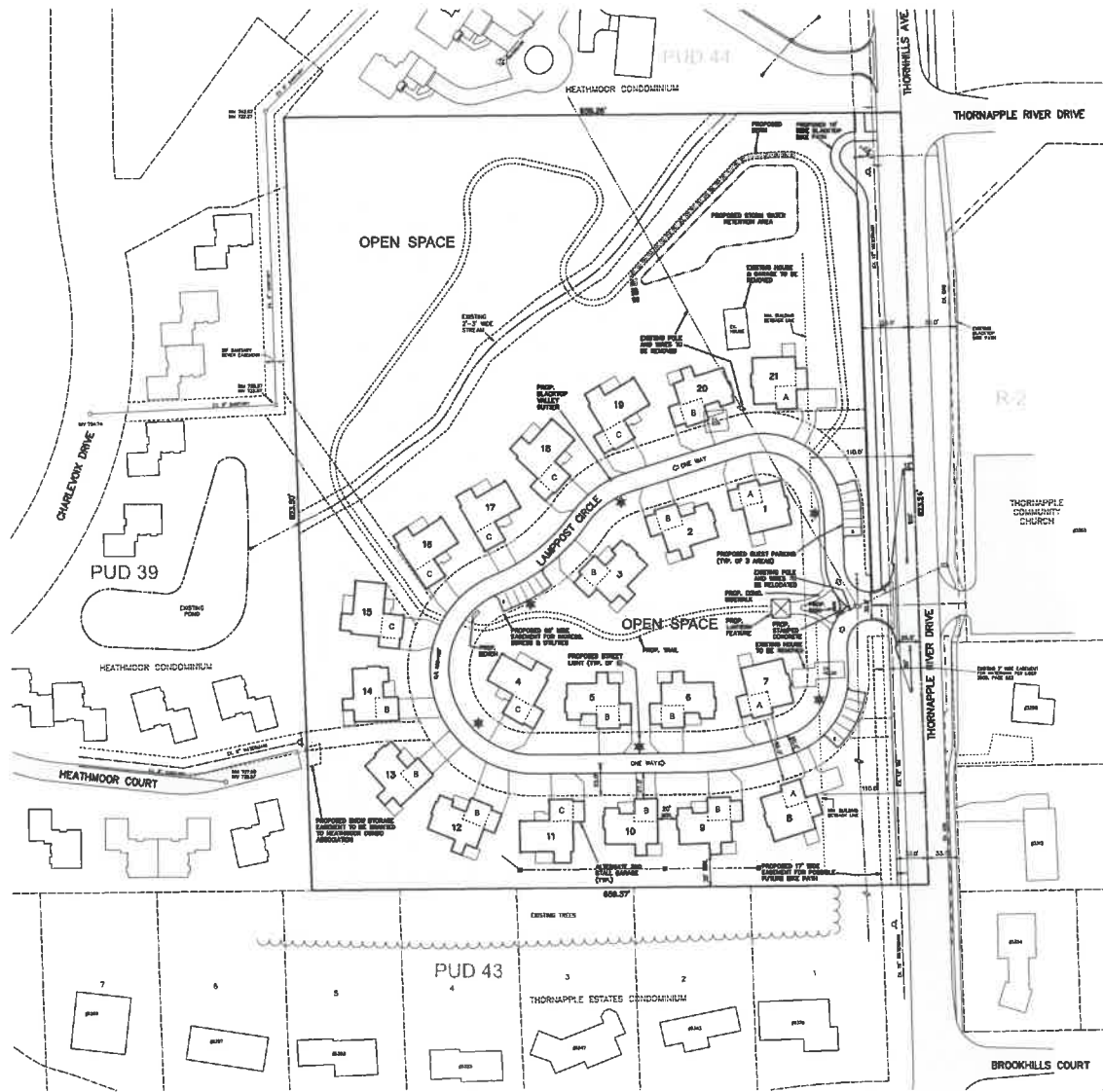


1.	2.	3.	4.	5.	6.
DATE	ISSUED FOR	REVISION	DATE	ISSUED FOR	REVISION

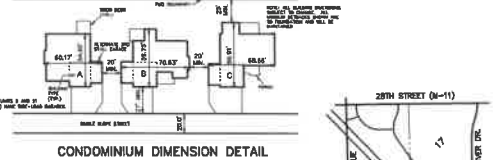
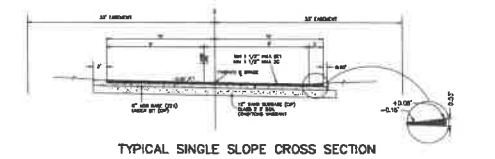
Lanterns
of Cascade



Section 4 - Civil Engineering Documentation
 Site Layout & Dimension Plan



- GENERAL NOTES:**
- PROPERTY INFORMATION:
 - a) PROPERTY DESCRIPTION: THE EAST ONE-QUARTER OF THE NORTH FIVE-EIGHTHS OF THE NORTH ONE-HALF OF THE SOUTH-EAST ONE-QUARTER OF SECTION 17, TOWN 4 NORTH, RANGE 10 WEST, CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN.
 - b) PROPERTY ADDRESS: 3217 THORNAPPLE RIVER DRIVE SE.
 - c) LOTS: 12.8 ACRES (11.63 ACRES EXCL. RW).
 - ZONING:
 - a) BOUNDARY INFORMATION BASED ON ALTA SURVEY PREPARED BY MOORE & BLODIGN, FEB. 6, 1974.
 - b) EXISTING GROUND CONTOURS AND TOPOGRAPHICAL FEATURES BASED ON AVAILABLE KENT COUNTY GIS DATA.
 - c) EXISTING UTILITY INFORMATION SHOWN BASED ON AVAILABLE RECORDS.
 - EXISTING ZONING: R-4 RESIDENTIAL. PROPOSED ZONING: R-2.
 - PROPOSED LAND USE SUMMARY:
 - a) 21 UNIT CONDOMINIUM PER CASCADE TOWNSHIP ZONING ORDINANCE CHAPTER 16, PUD DISTRICT.
 - b) ALLOWABLE DENSITY: 21 UNITS PER BASE DENSITY PLAN.
 - c) OPEN SPACE CALCULATION:
 - DEVELOPABLE AREA = 11.63 AC.
 - OPEN SPACE PROVIDED = 6.61 AC. = 51.7% (EXCLUDES STREAM)
 - PROPOSED DIMENSIONAL REQUIREMENTS:
 - a) MINIMUM DISTANCE BETWEEN BUILDINGS = 30'
 - b) SETBACK FROM PRIVATE DRIVE EASEMENT = 4' (MINIMUM FROM R-2 FRONT SETBACK REQUESTED)
 - c) FRONT OF GARAGE TO EDGE OF DRIVEWAY = 27'
 - d) FROM CA THORNAPPLE RIVER DRIVE = 110'
 - e) MINIMUM DISTANCE FROM OVERALL BOUNDARY = 20'
 - PROPOSED IMPROVEMENTS:
 - a) PRIVATE STREET WILL BE CONSTRUCTED TO MEET THE STANDARDS OF THE TOWNSHIP ORDINANCE.
 - b) SANITARY AND WASTEWATER LINES WILL BE EXTENDED AS SHOWN ON THE PLAN. CONSTRUCTION WILL CONFORM TO THE CITY OF GRAND RAPIDS REQUIREMENTS.
 - c) STORMWATER MANAGEMENT WILL BE DESIGNED TO CONFORM TO THE TOWNSHIP STORMWATER ORDINANCE.
 - d) POWER, GAS AND COMMUNICATION LINES WILL BE INSTALLED UNDERGROUND.
 - e) A 10' WIDE BIKE PATH WILL BE CONSTRUCTED FROM THE NORTH PROPERTY LINE TO THE NORTH EDGE OF THE SOUTH (EXT.) DRIVE. APPROPRIATE CHAIRS, LIGHTING, LANDSCAPING AND SIGNAGE WILL BE PROVIDED FOR THE DEVELOPMENT - SEE SEPARATE PLANS.
 - THIS PROPOSED PUD PLAN REQUESTS THE FOLLOWING CONDITIONS FROM THE UNDERLYING R-2 ZONING REQUIREMENTS AND THE TOWNSHIP PRIVATE STREET ORDINANCE:
 - a) FRONT SETBACK FROM PRIVATE DRIVE EASEMENT - PER SECTION 16.02, TABLE 16A, R-2: 4' (REQUIRES 30' TOTAL SETBACK RETRACK FOR BOTH SIDES @ 20' PER EACH SIDE PER SECTION 16.02, TABLE 16A. PER REQUIREMENTS AND THE TOWNSHIP PRIVATE STREET ORDINANCE).
 - b) TOTAL SETBACK RETRACK FOR BOTH SIDES @ 20' PER EACH SIDE PER SECTION 16.02, TABLE 16A. PER REQUIREMENTS AND THE TOWNSHIP PRIVATE STREET ORDINANCE.
 - c) TOTAL NUMBER OF UNITS PROVIDED ON ONE ACCESS IS 21 UNITS. PER SECTION 4 OF THE TOWNSHIP PRIVATE STREET ORDINANCE, ACCESS TO 20 OR MORE UNITS REQUIRES 2 MEANS OF ACCESS.



SITE DIMENSION AND LAYOUT PLAN
LANTERNS OF CASCADE PUD RE: 3217 THORNAPPLE RIVER DRIVE
 FOR: CROSS GROUP, LLC
 ATTN: DOUGLAS DEHAAN
 3263 HUDSON TRAILS DRIVE
 HUDSONVILLE, MI 49426
 OR: PART OF THE SE 1/4, SECTION 17, TOWN 4 NORTH, RANGE 10 WEST, CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN

DATE: 11/15/2019
 DRAWN BY: J. BLODIGN
 CHECKED BY: J. BLODIGN
 SCALE: 1" = 50'

excel engineering, inc.
 1000 S. WOODSTOCK AVENUE
 GRAND RAPIDS, MI 49508
 PHONE: 616.941.0001
 WWW.EXCELENG.COM

DATE: 11/15/2019
 PROJECT: 19030001
 SHEET: 1 of 3

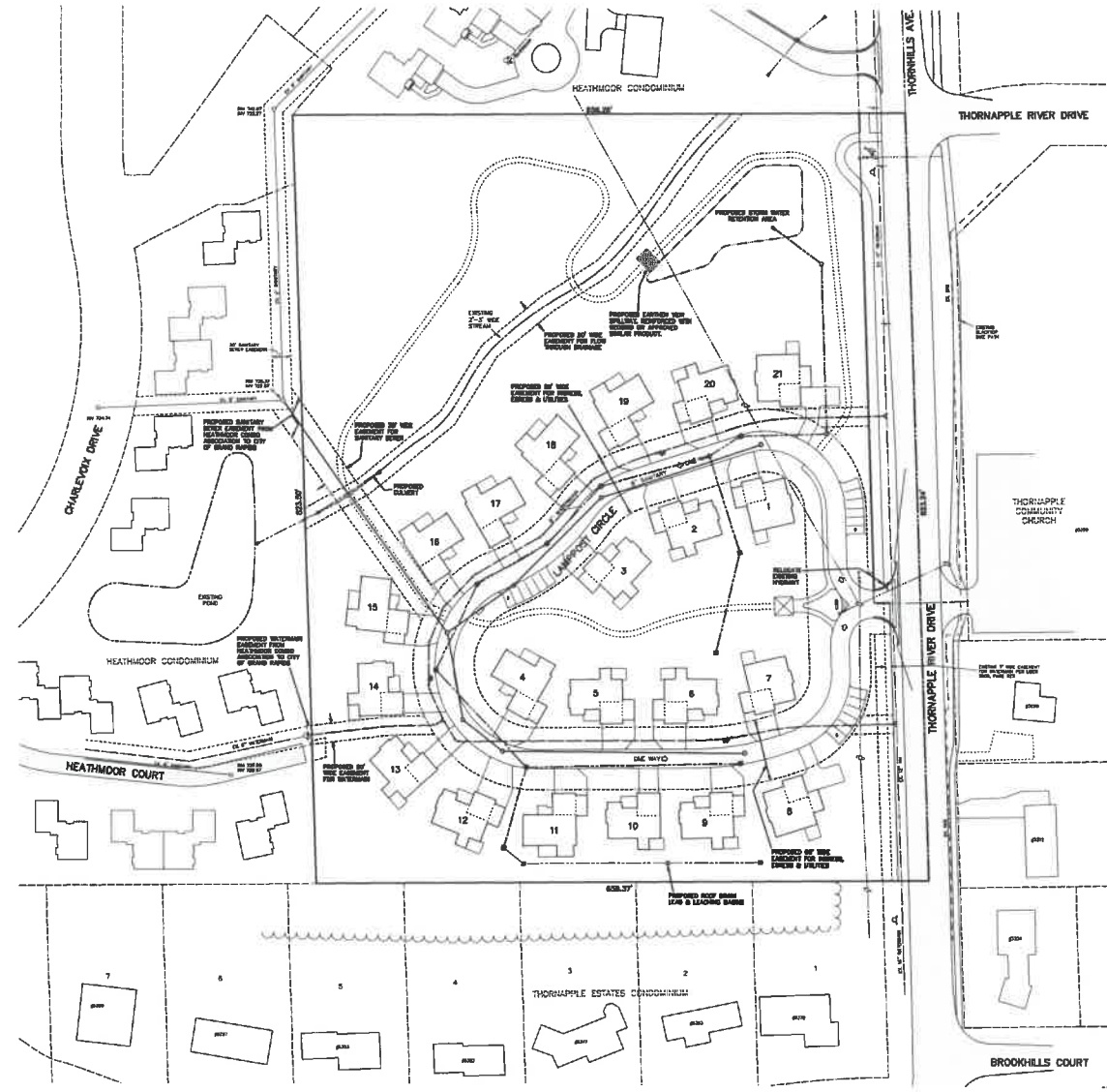


Lanterns
of Cascade



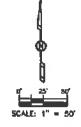
SHEET
7A

Section 4 - Civil Engineering Documentation
 Site Layout & Dimension Plan



NOTES:
 ALL SANITARY SEWER AND WATERMAIN TO BE DESIGNED FOR THE LATEST CITY OF GRAND RAPIDS SPECIFICATIONS. UPON COMPLETION AND APPROVAL UTILITIES WILL BE TURNED OVER TO CITY OF GRAND RAPIDS ALONG WITH APPROPRIATE EASEMENTS FOR ALL FUTURE MAINTENANCE.
 ALL STORM SEWER AND STORMWATER MANAGEMENT FACILITIES WILL BE DESIGNED TO MEET CASCADE TOWNSHIP STORMWATER ORDINANCE. FUTURE MAINTENANCE OF THESE FACILITIES TO BE THE RESPONSIBILITY OF THE TOBE-ESTABLISHED LANTERNS CONDOMINIUM ASSOCIATION.

- PROPOSED UTILITIES LEGEND
- REPRESENTS PROPOSED 6" WATERMAIN
- REPRESENTS PROPOSED 6" SAN SEWER
- REPRESENTS PROPOSED STORM SEWER



UTILITY PLAN
LANTERNS OF CASCADE PUD RE: 3217 THORNAPPLE RIVER DRIVE
 FOR: DOSSBC GROUP, LTD.
 ATTN: DOUGLAS DEHAAN
 3203 HUDSON TRAILS DRIVE
 HUDSONVILLE, MI 49634
 IN: PART OF THE SE 1/4, SECTION 17, T6M, R10W,
 CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN

excel engineering, inc.
 planners • engineers • architects
 3222 East Park, S.E. • Grand Rapids, MI 49508
 Phone: 616.755.1100 • www.excelengineering.com

DATE: 07/20/11
 APPROVED BY: [Signature]
 TITLE: [Title]

PROJECT NO: 000
 PLOT: 000
 DATE: 1/2/11

SHEET
 2 of 3

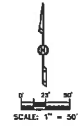


Lanterns
 of Cascade



1.	DATE	ISSUED FOR APPLICATION	FOR PUD
2.	2/8/19		
3.			
4.			
5.			
6.			

Section 4 - Civil Engineering Documentation
 Site Utility Plan



SITE GRADING PLAN
LANTERNS OF CASCADE PUD RE: 3217 THORNAPPLE RIVER DRIVE
 FOR: JOSSIS GROUP, LLC
 ATTN: DOUGLAS DEHAAN
 3283 HUDSON TRAILS DRIVE
 HUNTSVILLE, MS 38400
 IN: PART OF THE SE 1/4, SECTION 17, T8N, R10W,
 CASCADE TOWNSHIP, KENT COUNTY, MICHIGAN

steel engineering, Inc.
 10000 E. 14th Avenue, Suite 100
 Denver, CO 80231
 Phone: 303.751.1000
 www.steeleng.com

DRAWN BY: JAW/BJD
 CHECKED BY: JAW/BJD
 DATE: 11/11/19

PROJECT NO.: 1903000
 SHEET: 3 of 3



1.	DATE	ISSUED FOR:
2.	2/6/19	APPLICATION FOR PUD
3.		
4.		
5.		
6.		

Lanterns
of Cascade



SHEET

9

Section 4 - Civil Engineering Documentation
 Site Grading Plan

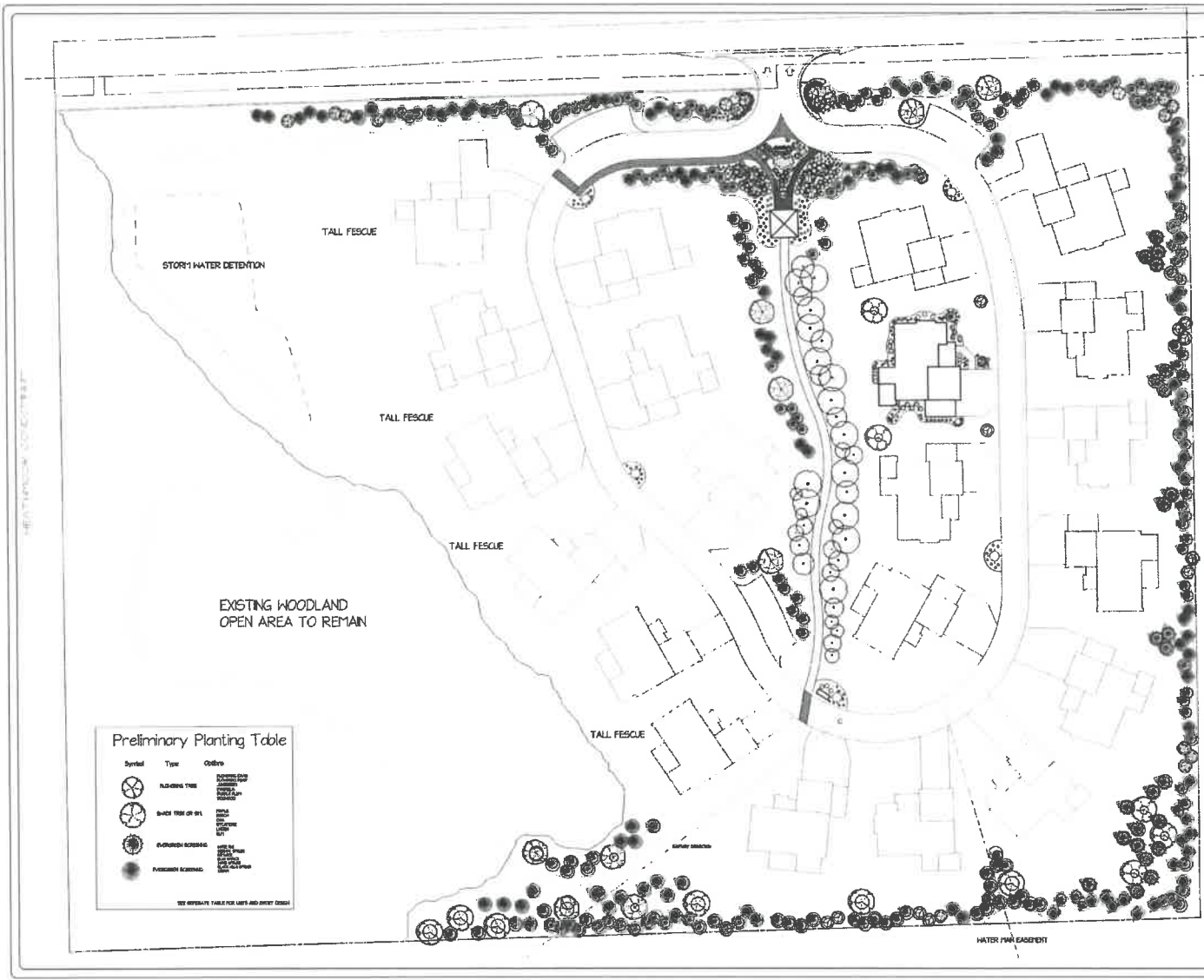


1. DATE	ISSUED FOR
2. 10/19	DESCRIPTION
3.	FOR FILE
4.	
5.	
6.	

Lanterns of Cascade



Section 5 - Site Clearing & Landscape Plan



NOTES

ENVIRONMENTAL CONCEPTS & LANDSCAPE

2526 Quincy Street, Hudsonville MI 49426
616.646.0246

1. DATE ISSUED FOR APPLICATION FOR PLD

2. DATE FOR APPLICATION FOR PLD

3.

4.

5.

6.

1 2-4-18 PRELIMINARY LANDSCAPE PLAN/DEVELOPER

No. Rev. Date

Lanterns
Cascade M1

DeHaan Homes
Hudsonville M1

Preliminary
Landscape
Plan

Scale: 1/8"=1'-0"

Drawn: mcm

Checked: [Signature]

Date: 1-31-18

Sheet No: L101

Drawn by: [Signature]

Section 5 - Landscaping Plan
Master Landscaping Plan



Lanterns
of Cascade

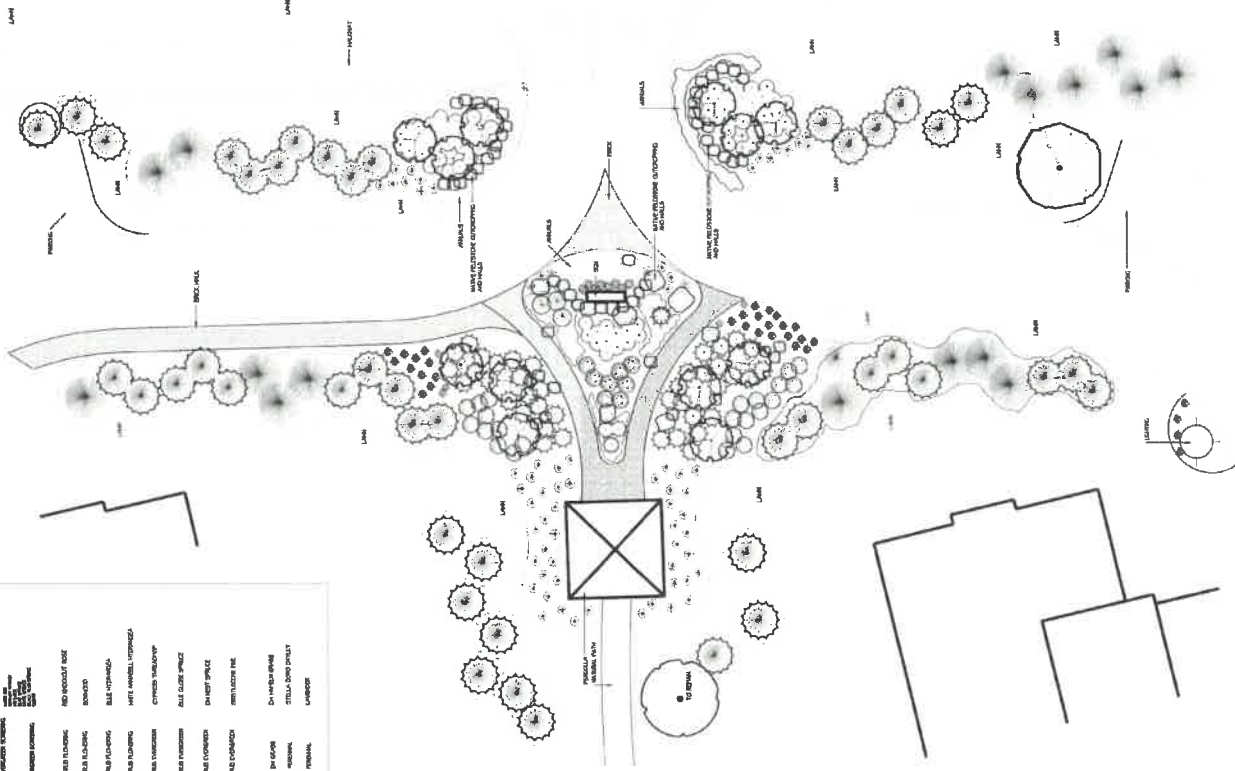


SHEET

13

Preliminary Planting Table

Symbol	Type	Quantity
	Large Tree	1
	Medium Tree	2
	Small Tree	3
	Shrub	4
	Groundcover	5
	Perennial	6
	Annual	7
	Moss	8
	Fern	9
	Sedum	10
	Other Plant	11



NOTES

IMAGINEXT
Landscape Architecture & Construction

2506 Orncy Street Hudsonville MI 49426
666.694.0248

1.	DATE	ISSUED FOR
2.	2.04.19	PARAFICATION FOR PLO
3.		
4.		
5.		
6.		

Lanterns
of Cascade M1

DeHaan Homes
Hudsonville MI

Preliminary
Entrance
Landscape
Detail

SCALE	1/4" = 1'-0"
DRAWN BY	STICKY
CHECKED BY	
DATE	1-30-19
DATE OF PLO	

PROJECT NO.	L102
-------------	------

Section 5 - Landscaping Plan
Enlarged Entry Landscape Plan

DEHAAN HOMES

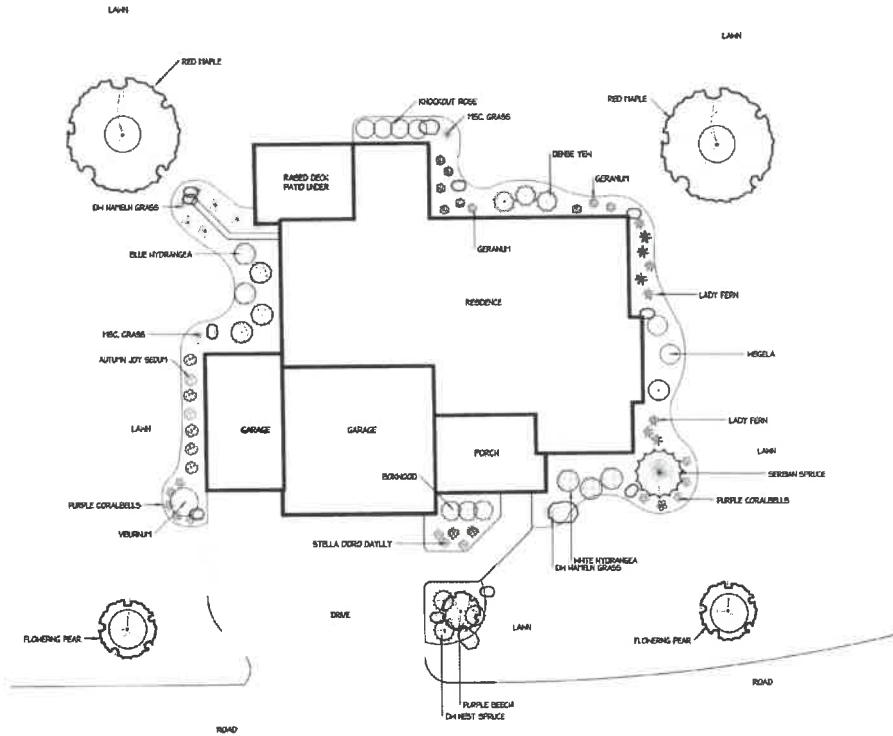
Lanterns
of Cascade

IMAGINEXT
LIFESTYLE DESIGN

SHEET 14

Preliminary Planting Table

Symbol	Type	Options
	FLOWERING TREE	PURPLE BEECH FLOWERING PEAR
	SHADE TREE OR BI	RED MAPLE
	EVERGREEN BORING	SERBIAN SPRUCE
	FLOWERING SHRUB	KNOCKOUT ROSE
	SHADELEAF EVERGREEN	BOHWOOD
	FLOWERING SHRUB	WHITE HYDRANGEA
	FLOWERING SHRUB	BLUE HYDRANGEA
	DM EVERGREEN	DENSE YEW
	FLOWERING SHRUB	VERBONUM KERSHAW SPICE
	FLOWERING SHRUB	HEGELA
	DM EVERGREEN	DM NEST SPRUCE
	DM GRASS	DM WINTER GRASS
	SPRIGIT GRASS	PISCANTHUS GRASS
	PERENNIAL	PURPLE CORALBELLS
	PERENNIAL	DM STELLA DORO DARTLEY
	PERENNIAL	GERANIUM PERENNIAL
	PERENNIAL	AUTUMN JOY SEDUM
	PERENNIAL	LADY FERN



NOTES

ENVIRONMENTAL CONCERNS & MAINTENANCE

2506 Quincy Street Hudsonville MI 49426
616.966.0748

DATE	REVISION	BY	FOR

Lanterns
Cascade M1

DeHoon Homes
Hudsonville MI

Preliminary
Unit Landscape
Plan

Scale: 1/4" = 1'-0"
Drawing: L103
Date: 1-30-11
Sheet of: 15

DATE	REVISION	BY	FOR

Lanterns
of Cascade



Section 5 - Landscaping Plan
Individual Unit Landscaping



± 24-30" overall dimension



Aged Iron Metalwork to match Pella 'Iron Ore' window cladding typ.

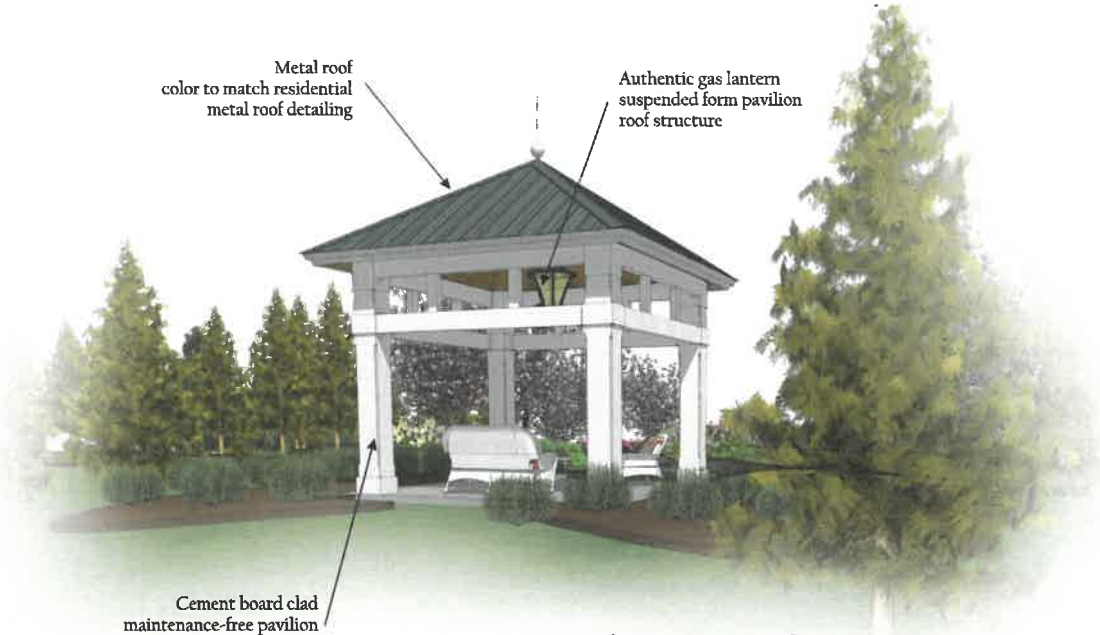
Clear glass surround w/ Aged Iron Metalwork frame & internals typ.

Aged Iron Metalwork Sconce plate on house units

Typical Gas Lantern Detail

Metal roof color to match residential metal roof detailing

Authentic gas lantern suspended from pavilion roof structure



Cement board clad maintenance-free pavilion structure

View of Entrance Pavilion from trail side



Entrance sign to meet the maximum allowable signage size of 64 s.f. maximum sign area

Development sign to be free standing metallic letters anchored to landscape stone retaining wall & lighted with approved ground lighting w/ photometric eye

View of Entrance Pavilion from drive entry

Lanterns
of Cascade

Section 6 - Entrance & Sign Detail
Pavilion, Gas Light & Signage



1.	DATE	DESCRIPTION	APPROVED FOR EDP
2.	3/21/19		
3.			
4.			
5.			
6.			

Lanterns
of Cascade



SHEET

16



September 4, 2018

Mr. Steve Peterson
Cascade Township
2865 Thornhills Drive SE
Grand Rapids, MI 49546

Re: Lanterns
3217 Thornapple River Drive
Basic Plan Submittal

Dear Steve,

Enclosed please find the following information per the requirement of the PUD Development Basin Plan:

- PUD Plan (Sheet 1) – 5 copies
- Base Density Plan (Sheet 2) – 5 copies
- Application
- \$500 check for escrow account

Having submitted this package, the applicant requests to be placed on the next available Planning Commission meeting for review of the basic plan.

If you need anything else to process this request, please contact me.

Very truly yours,

Don De Groot, P.E.
ddegroot@exxelengineering.com

cc: Douglas DeHaan, via email

P:/Projects/2018/181566/documents/letters/Lanterns



FRONT PERSPECTIVE
2- Stall Front Load

Main Level Living Area: 1,731 s.f.
 Lower Level Living Area: 1,156 s.f.
 TOTAL LIVING AREA: 2,887 s.f.



REAR PERSPECTIVE
2- Stall Front Load

Section 7 - Residential Home Designs
Plan A



NO.	DATE	DESCRIPTION
1.		1. 10/01/2011
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Lanterns
of Cascade

Floor Plan
'A'



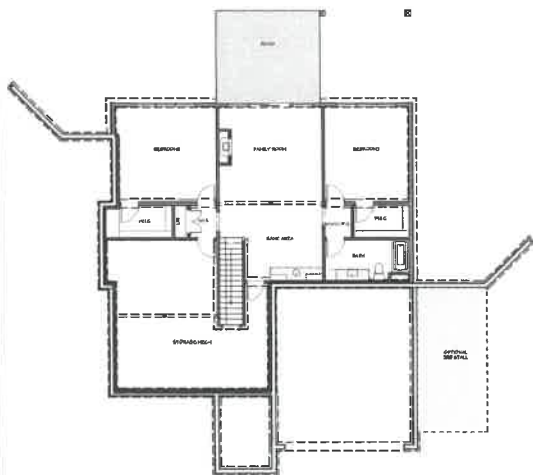
SHEET

18



MAIN LEVEL PLAN

SCALE: 1/8" = 1'-0"



LOWER LEVEL PLAN

SCALE: 1/8" = 1'-0"



Optional:
3-Stall Front Load



Optional:
3-Stall Side Load



NO.	DATE	SCALE	DESCRIPTION	BY	CHKD.
1			FOUNDATION		
2					
3					
4					
5					
6					
7					
8					

Lanterns
of Cascade

Floor Plan
'A'



Section 7 - Residential Home Designs
Plan A

SHEET

19

STAFF REPORT

TO: Cascade Charter Township Planning Commission
FROM: Steve Peterson, Community Development Director
REPORT DATE: February 25, 2019
MEETING DATE: March 4, 2019
CASE: #17-3392/ Freedom Reins Farm

GENERAL INFORMATION

- A. Applicant: Jim Morgan RJM Design
1971 East Beltline Ave
Suite 217
Grand Rapids MI 49525
Telephone: 336-6071
Email: jmorgan@rjm-design.com
- B. Status of Applicant: designer for owner
- C. General Location: The property is located on the north side of 52nd st just east of Whitneyville Ave.
- D. Requested Action: develop into 12 detached single-family site condominium project.
- E. Existing Zoning on Subject Parcels: ARC
- F. Zoning on Adjoining Parcels: ARC
- G. Parcel Size: Approximately 43 acres
- H. Existing Land Use on Subject Parcel: Vacant
- I. Adjacent Area Land Uses:
- | | | |
|-------|---|-------------|
| North | - | I-96 |
| East | - | Residential |
| South | - | Residential |
| West | - | Residential |

STAFF ANALYSIS

1. The applicant is requesting Tentative Preliminary approval. The development would allow for a new site condominium subdivision for 12 single family detached homes on a new private road. A site condominium subdivision that is not asking for exceptions does not require a public hearing.
2. The development will not be seeking any deviations from our subdivision ordinance.
3. The property is zoned ARC and is Master planned Suburban Residential, which is essentially an extension of the residential zoning district.
4. The area is not served by water and sewer and therefore the property would have to get approval from the KCHD for on-site well and septic.
5. The KCRC has issued a drive permit for access to 52nd St. the developer has changed the name of the road. However, the plans have not been updated to incorporate the new name.
6. There are no projects in the Capital Improvement Plan that would be activated as a result of this project.
7. The applicant has chosen the "50% private open space" method for determining minimum lot size. This method requires a minimum lot size of 50,000 sq.ft. The open space provided is calculated after removing the non-buildable portion of the property.
8. The lots range in size from 50,042 to almost 65,661 sq ft. with an average lot size of 50,707 sq ft.
9. This plan meets our subdivision ordinance for density and lot size requirements.
10. The process follows our platting process which is a little different than what you are used to seeing with the PUD rezoning process. The platting process does not require a public hearing but does require the applicant to submit more detailed information each time. For this stage you are providing a recommendation to the Township for their consideration.
11. As with all of our residential developments, the developer will be required to install an airport recognition statement in the deed restrictions.
12. The applicant has not indicated any light poles or street trees on the plan.
13. The subdivision is located outside the utility service area.
14. The applicant has submitted some private deed restrictions but has not yet submitted the master deed and bylaws. These documents will need to be reviewed by the township to ensure there are no inconsistencies with township ordinances.
15. As with all of our residential developments, an airport recognition statement will be required. This will need to be incorporated into the master deed and/or bylaws.
16. The Township Engineer has reviewed and approved the plans. A storm water maintenance agreement will be required.

17. Tentative Preliminary Approval shall guarantee that the general terms and conditions under which approval was granted will not be changed by the Township, and further, shall confer upon the subdivider approval of lot sizes, lot orientation, and street layout for a period of one (1) year from the date of tentative approval. Such tentative approval may be extended if applied for by the subdivider and granted by the Township Board in writing.

STAFF RECOMMENDATION

Staff believes this project meets the requirements for tentative preliminary plat approval of our subdivision ordinance is consistent with the Master Plan. Staff Recommends approval of the plan with the following conditions:

1. Submit the required information for Final Preliminary Plat approval.
2. Execute the storm water maintenance agreement.
3. Update the plans to include new road name and approval from KCRC for road name.
4. Copy of the proposed deed restrictions, including the airport recognition statement and storm water agreement.
5. Show location and type of light poles.
6. Show location and type of street trees.
7. Block grading plan for storm water runoff from home sites.

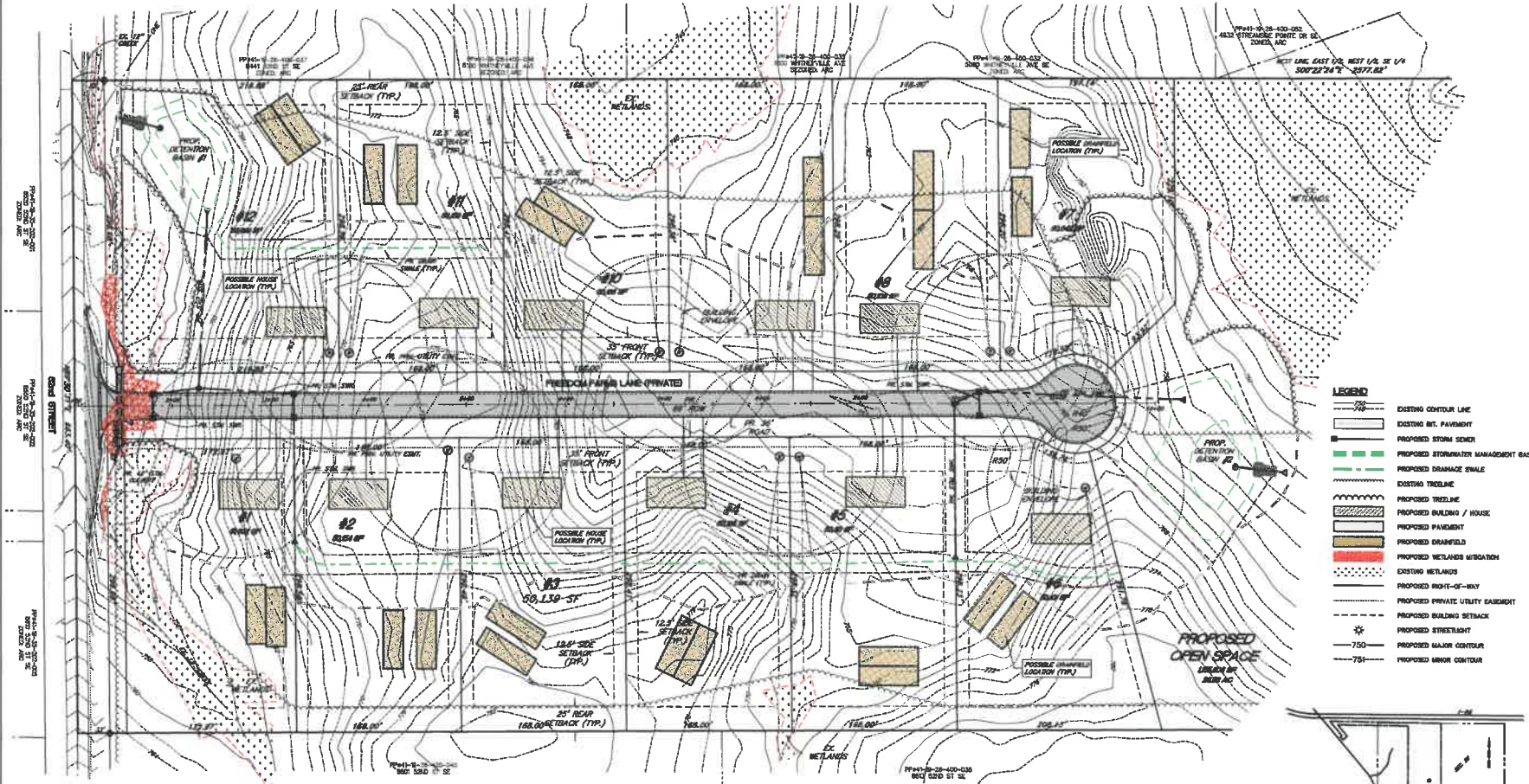
If you approve the plan, the development will go before the Township Board for tentative preliminary approval. Once approved by the Township Board, it will come back to you again with the additional information for final preliminary plat approval.

811 - CALL BEFORE YOU DIG
 COMPLETE WETLAND WORK IN ACCORDANCE
 WITH MDCD PERMIT #MRP013439.

PROPOSED 12-UNIT RESIDENTIAL SITE CONDOMINIUM

PRELIMINARY SITE PLAN

SEC. 26, T6N, R10W, CASCADE CHTR. TWP.



- LEGEND**
- - - - - EXISTING CONTOUR LINE
 - - - - - EXISTING RT. PAVEMENT
 - - - - - PROPOSED STORM SEWER
 - - - - - PROPOSED STORMWATER MANAGEMENT BASIN
 - - - - - PROPOSED DRAINAGE SWALE
 - - - - - EXISTING TIE LINE
 - - - - - PROPOSED TIE LINE
 - - - - - PROPOSED BUILDING / HOUSE
 - - - - - PROPOSED PAVEMENT
 - - - - - PROPOSED GRASSFIELD
 - - - - - PROPOSED WETLANDS MITIGATION
 - - - - - EXISTING WETLANDS
 - - - - - PROPOSED RIGHT-OF-WAY
 - - - - - PROPOSED PRIVATE UTILITY EASEMENT
 - - - - - PROPOSED BUILDING SETBACK
 - - - - - PROPOSED STREETLIGHT
 - - - - - PROPOSED MAJOR CONTOUR
 - - - - - PROPOSED MINOR CONTOUR

- LEGEND**
- 1 - 100' SIDE SETBACK
 - 2 - 100' REAR SETBACK
 - 3 - 100' FRONT SETBACK
 - 4 - 100' CORNER SETBACK
 - 5 - 100' DRIVEWAY SETBACK
 - 6 - 100' DRIVEWAY SETBACK
 - 7 - 100' DRIVEWAY SETBACK
 - 8 - 100' DRIVEWAY SETBACK
 - 9 - 100' DRIVEWAY SETBACK
 - 10 - 100' DRIVEWAY SETBACK
 - 11 - 100' DRIVEWAY SETBACK
 - 12 - 100' DRIVEWAY SETBACK
 - 13 - 100' DRIVEWAY SETBACK
 - 14 - 100' DRIVEWAY SETBACK
 - 15 - 100' DRIVEWAY SETBACK
 - 16 - 100' DRIVEWAY SETBACK
 - 17 - 100' DRIVEWAY SETBACK
 - 18 - 100' DRIVEWAY SETBACK
 - 19 - 100' DRIVEWAY SETBACK
 - 20 - 100' DRIVEWAY SETBACK
 - 21 - 100' DRIVEWAY SETBACK
 - 22 - 100' DRIVEWAY SETBACK
 - 23 - 100' DRIVEWAY SETBACK
 - 24 - 100' DRIVEWAY SETBACK
 - 25 - 100' DRIVEWAY SETBACK
 - 26 - 100' DRIVEWAY SETBACK
 - 27 - 100' DRIVEWAY SETBACK
 - 28 - 100' DRIVEWAY SETBACK
 - 29 - 100' DRIVEWAY SETBACK
 - 30 - 100' DRIVEWAY SETBACK
 - 31 - 100' DRIVEWAY SETBACK
 - 32 - 100' DRIVEWAY SETBACK
 - 33 - 100' DRIVEWAY SETBACK
 - 34 - 100' DRIVEWAY SETBACK
 - 35 - 100' DRIVEWAY SETBACK
 - 36 - 100' DRIVEWAY SETBACK
 - 37 - 100' DRIVEWAY SETBACK
 - 38 - 100' DRIVEWAY SETBACK
 - 39 - 100' DRIVEWAY SETBACK
 - 40 - 100' DRIVEWAY SETBACK
 - 41 - 100' DRIVEWAY SETBACK
 - 42 - 100' DRIVEWAY SETBACK
 - 43 - 100' DRIVEWAY SETBACK
 - 44 - 100' DRIVEWAY SETBACK
 - 45 - 100' DRIVEWAY SETBACK
 - 46 - 100' DRIVEWAY SETBACK
 - 47 - 100' DRIVEWAY SETBACK
 - 48 - 100' DRIVEWAY SETBACK
 - 49 - 100' DRIVEWAY SETBACK
 - 50 - 100' DRIVEWAY SETBACK
 - 51 - 100' DRIVEWAY SETBACK
 - 52 - 100' DRIVEWAY SETBACK
 - 53 - 100' DRIVEWAY SETBACK
 - 54 - 100' DRIVEWAY SETBACK
 - 55 - 100' DRIVEWAY SETBACK
 - 56 - 100' DRIVEWAY SETBACK
 - 57 - 100' DRIVEWAY SETBACK
 - 58 - 100' DRIVEWAY SETBACK
 - 59 - 100' DRIVEWAY SETBACK
 - 60 - 100' DRIVEWAY SETBACK
 - 61 - 100' DRIVEWAY SETBACK
 - 62 - 100' DRIVEWAY SETBACK
 - 63 - 100' DRIVEWAY SETBACK
 - 64 - 100' DRIVEWAY SETBACK
 - 65 - 100' DRIVEWAY SETBACK
 - 66 - 100' DRIVEWAY SETBACK
 - 67 - 100' DRIVEWAY SETBACK
 - 68 - 100' DRIVEWAY SETBACK
 - 69 - 100' DRIVEWAY SETBACK
 - 70 - 100' DRIVEWAY SETBACK
 - 71 - 100' DRIVEWAY SETBACK
 - 72 - 100' DRIVEWAY SETBACK
 - 73 - 100' DRIVEWAY SETBACK
 - 74 - 100' DRIVEWAY SETBACK
 - 75 - 100' DRIVEWAY SETBACK
 - 76 - 100' DRIVEWAY SETBACK
 - 77 - 100' DRIVEWAY SETBACK
 - 78 - 100' DRIVEWAY SETBACK
 - 79 - 100' DRIVEWAY SETBACK
 - 80 - 100' DRIVEWAY SETBACK
 - 81 - 100' DRIVEWAY SETBACK
 - 82 - 100' DRIVEWAY SETBACK
 - 83 - 100' DRIVEWAY SETBACK
 - 84 - 100' DRIVEWAY SETBACK
 - 85 - 100' DRIVEWAY SETBACK
 - 86 - 100' DRIVEWAY SETBACK
 - 87 - 100' DRIVEWAY SETBACK
 - 88 - 100' DRIVEWAY SETBACK
 - 89 - 100' DRIVEWAY SETBACK
 - 90 - 100' DRIVEWAY SETBACK
 - 91 - 100' DRIVEWAY SETBACK
 - 92 - 100' DRIVEWAY SETBACK
 - 93 - 100' DRIVEWAY SETBACK
 - 94 - 100' DRIVEWAY SETBACK
 - 95 - 100' DRIVEWAY SETBACK
 - 96 - 100' DRIVEWAY SETBACK
 - 97 - 100' DRIVEWAY SETBACK
 - 98 - 100' DRIVEWAY SETBACK
 - 99 - 100' DRIVEWAY SETBACK
 - 100 - 100' DRIVEWAY SETBACK

LEGAL DESCRIPTION (FROM TAX RECORDS):
 The East 1/2 of the West 1/2 of the SE 1/4, also the North 50 feet of the West 1/2 of the West 1/2 of the SE 1/4, also part of the NE 1/4 of the SW 1/4, described as commencing at the Center of section thence West along the East-West 1/4 line to the centerline of Whitnaye Avenue; thence SE 1/4 along said Avenue 325 feet; thence NE 1/4 perpendicular to the centerline of said Avenue 141 feet; thence N 1/4 parallel with said centerline to a point 66 feet South from said East-West 1/4 line; thence East parallel with said East-West 1/4 line to the North-South 1/4 line; thence North to Beginning, Section 26, T6N, R10W, Cascade Township, Kent County, Michigan.

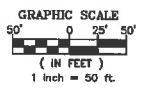
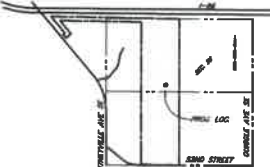
BENCHMARK NO. 1 E.L. - 734-92 NAVD83
 NGS BM DP2028

SITE PLAN NOTES:

1. ZONING: FREEDOM FARMS FARMS LLC ATTN: DOUG LEE 6613 82ND STREET SE ADA IN 8000
2. PARCELS: 6613 82ND STREET SE P.P.A. 41-18-26-100-018 AREA 43.54 ACRES
3. EXISTING USE: VACANT
4. PROPOSED USE: RESIDENTIAL SITE CONDO
5. RESIDENTIAL SITE CONDO: MIN. LOT AREA: 43.54 SQ. FT. (1.0 ACRE) MIN. LOT BIRTH: 115 FT. FRONT SETBACK: 30 FT. SIDE SETBACK: 10 FT. MIN. (TOTAL 25 FT. BOTH SIDES) REAR SETBACK: 25 FT. MAXIMUM BUILDING HEIGHT: 30 FT. OR 2-1/2 STORIES MAXIMUM LOT COVERAGE: N/A
6. SITE ADDRESS: THE PROPOSED ROAD IS TO BE PRIVATE AND SHALL MEET WITH THE CASCADE CHARTER TOWNSHIP MINIMUM REQUIREMENTS. MET WITH KENT COUNTY ROAD COMMISSION ON 09/27/18 TO REVIEW LOCATION & OBTAIN PRELIMINARY DRIVE LOCATION APPROVAL.
7. UTILITIES: EACH UNIT SHALL BE SERVED BY PRIVATE WELL AND INDIVIDUAL SEPTIC AS APPROVED BY THE KENT COUNTY HEALTH DEPARTMENT. GAS, ELECTRIC AND TELEPHONE SHALL BE UNDERGROUND.
8. SURFACE WATER DRAINAGE: THE STORM WATER RUN-OFF WILL BE COLLECTED IN THE STORM SEWER SYSTEM AND DETAINED IN ACCORDANCE WITH THE CASCADE CHARTER TOWNSHIP STORM WATER DRAINAGE. THE PROJECT SITE IS NOT WITHIN A 100-YEAR FLOODPLAIN. WETLANDS SHOWN ON THE PLAN ARE FOR THE 50% & 100-YEAR REPORT DATED 07/18 AND UPDATED 09/18. THE USER HAS REVIEWED A PERMIT #MRP013439 FOR THE CONVEY CROSSING NORTH OF 82ND STREET.
9. SITE LIGHTING: ALL PROPOSED SITE LIGHTING WILL BE IN ACCORDANCE WITH THE CASCADE CHARTER TOWNSHIP ORDINANCE.

LEGEND

- - - - - EXISTING CONTOUR LINE
- - - - - EXISTING RT. PAVEMENT
- - - - - PROPOSED STORM SEWER
- - - - - PROPOSED STORMWATER MANAGEMENT BASIN
- - - - - PROPOSED DRAINAGE SWALE
- - - - - EXISTING TIE LINE
- - - - - PROPOSED TIE LINE
- - - - - PROPOSED BUILDING / HOUSE
- - - - - PROPOSED PAVEMENT
- - - - - PROPOSED GRASSFIELD
- - - - - PROPOSED WETLANDS MITIGATION
- - - - - EXISTING WETLANDS
- - - - - PROPOSED RIGHT-OF-WAY
- - - - - PROPOSED PRIVATE UTILITY EASEMENT
- - - - - PROPOSED BUILDING SETBACK
- - - - - PROPOSED STREETLIGHT
- - - - - PROPOSED MAJOR CONTOUR
- - - - - PROPOSED MINOR CONTOUR



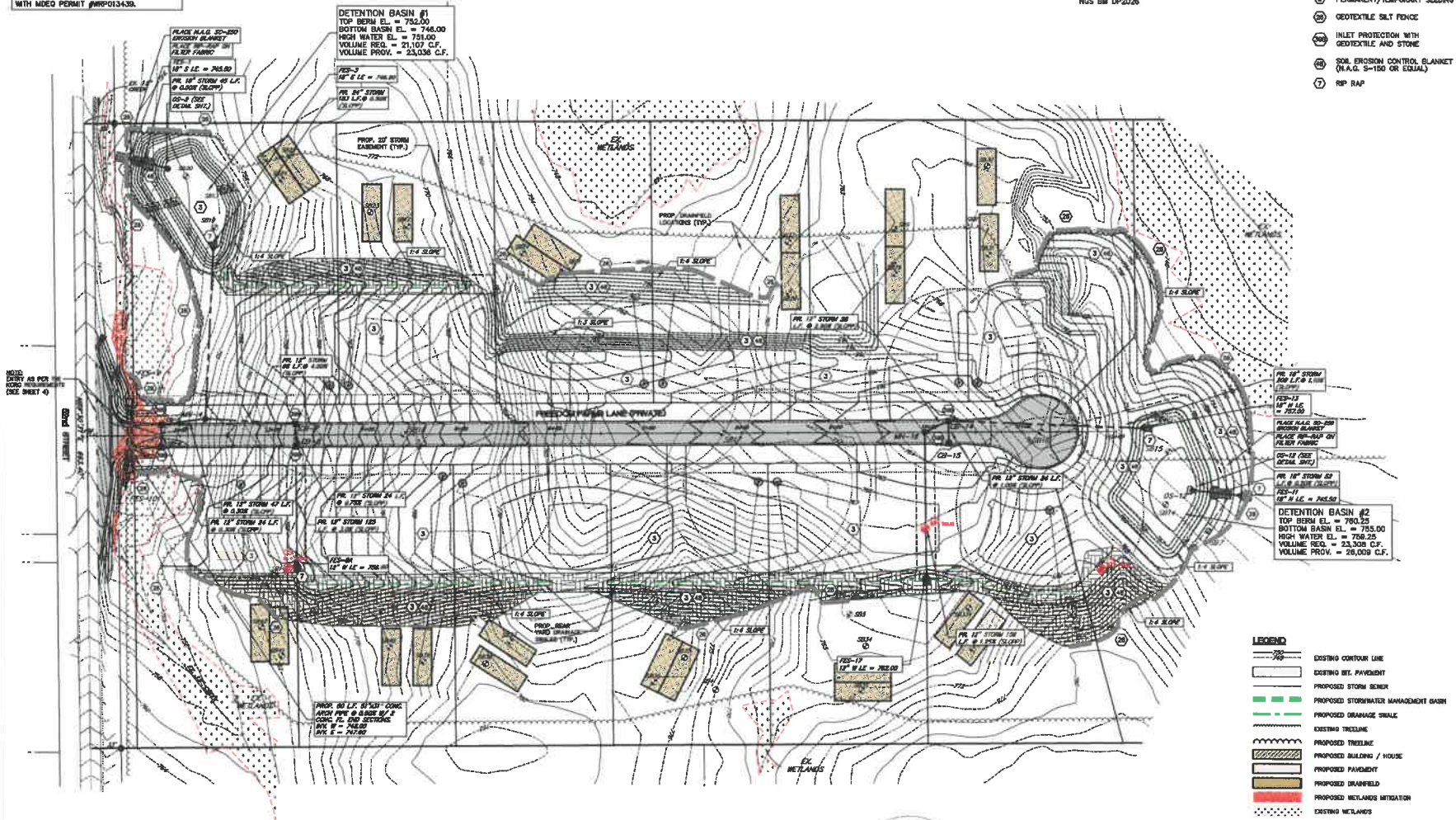
CLIENT: FREEDOM FARMS FARMS, LLC
 PROJECT NO. 171366
 SHEET C2.0
 PRELIMINARY SITE PLAN
 PART OF SECTION 26, T6N, R10W, CASCADE CHARTER TOWNSHIP, KENT COUNTY, MI
 6613 82ND STREET SE ADA IN 8000
 PREPARED BY: DOUG LEE
 DATE: 09/27/18
 REVISIONS: 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

811 - CALL BEFORE YOU DIG
 COMPLETE WETLAND WORK IN ACCORDANCE
 WITH MDEQ PERMIT #WR0134350

BENCHMARK NO. 1 EL. = 734.92 NAVD83
 NGS BM DP2026

SOIL EROSION CONTROL KEY

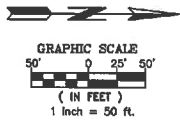
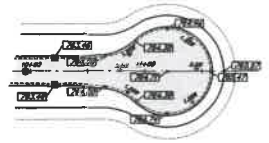
- ① PERMANENT/TEMPORARY SEEDING
- ② GEOTEXTILE SILT FENCE
- ③ INLET PROTECTION WITH GEOTEXTILE AND STONE
- ④ SOIL EROSION CONTROL BLANKET (N.A.G. S=100 OR EQUAL)
- ⑤ RP RAP



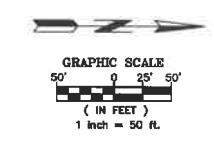
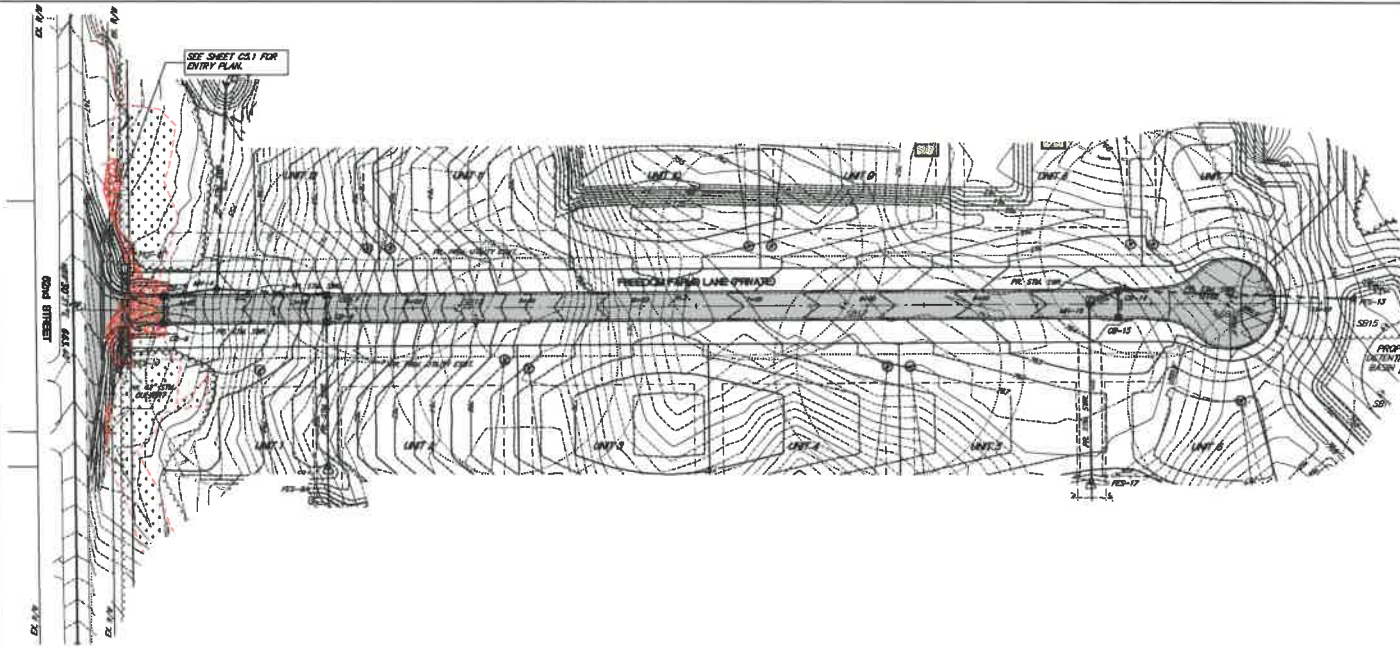
NOTE: ENTRY AS PER
 MDC REQUIREMENT
 (SEE SHEET 4)

- LEGEND**
- EXISTING CONTOUR LINE
 - EXISTING BIT. PAVEMENT
 - PROPOSED STORM SEWER
 - PROPOSED STORMWATER MANAGEMENT BASIN
 - PROPOSED ORANGE GRADE
 - EXISTING TIE/LINE
 - PROPOSED TIE/LINE
 - PROPOSED BUILDING / HOUSE
 - PROPOSED PAVEMENT
 - PROPOSED DRAINFIELD
 - PROPOSED WETLANDS MITIGATION
 - EXISTING WETLANDS
 - PROPOSED RIGHT-OF-WAY
 - PROPOSED PRIVATE UTILITY EASEMENT
 - PROPOSED BUILDING SETBACK
 - PROPOSED STREETLIGHT
 - 750' PROPOSED MAJOR CONTOUR
 - 751' PROPOSED MINOR CONTOUR

- LEGEND**
- EXISTING CONTOUR LINE
 - EXISTING BIT. PAVEMENT
 - PROPOSED STORM SEWER
 - PROPOSED STORMWATER MANAGEMENT BASIN
 - PROPOSED ORANGE GRADE
 - EXISTING TIE/LINE
 - PROPOSED TIE/LINE
 - PROPOSED BUILDING / HOUSE
 - PROPOSED PAVEMENT
 - PROPOSED DRAINFIELD
 - PROPOSED WETLANDS MITIGATION
 - EXISTING WETLANDS
 - PROPOSED RIGHT-OF-WAY
 - PROPOSED PRIVATE UTILITY EASEMENT
 - PROPOSED BUILDING SETBACK
 - PROPOSED STREETLIGHT
 - 750' PROPOSED MAJOR CONTOUR
 - 751' PROPOSED MINOR CONTOUR



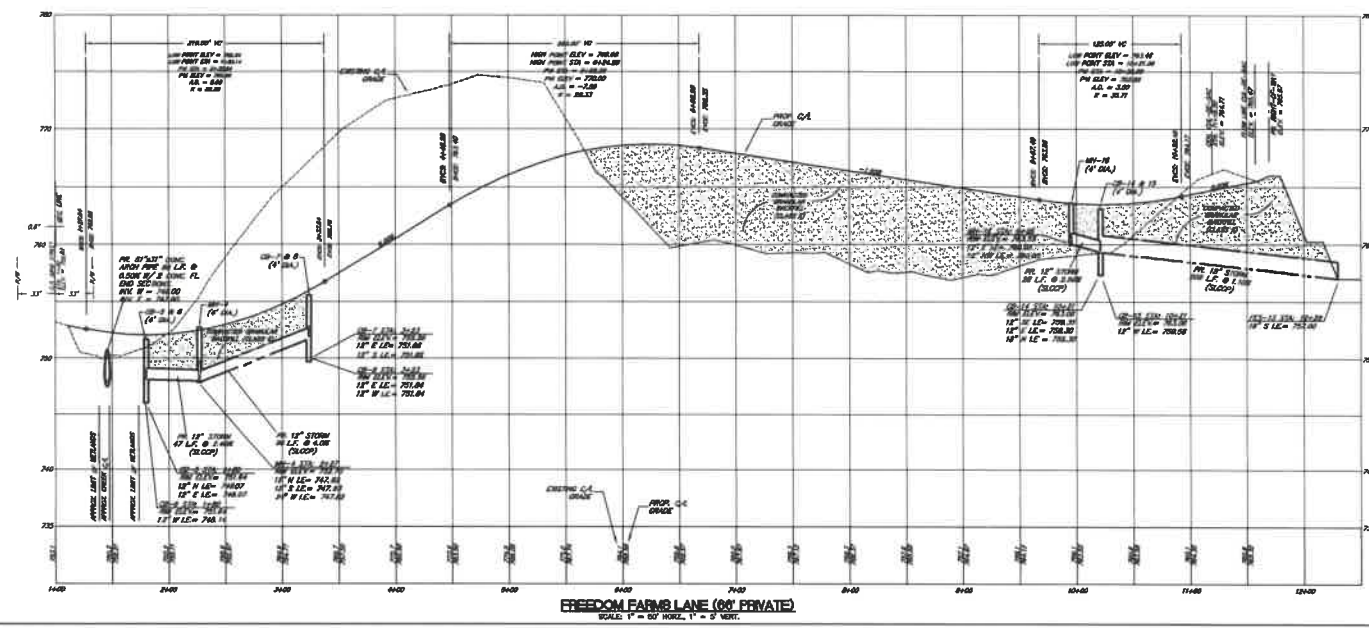
PROJECT NO. 171386
 SHEET C.3.0
 CLIENT: FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8035 52ND STREET SE
 ADA, MI 48301
 DESIGNER: R. B. BROWN & ASSOCIATES, INC.
 1000 W. WASHINGTON ST., SUITE 100
 ANN ARBOR, MI 48106
 PHONE: 734.769.2222
 FAX: 734.769.2222
 WWW.RBBANDASSOCIATES.COM
 REGISTERED PROFESSIONAL ENGINEER
 LICENSE NO. 62057
 EXPIRES 12/31/2024
 EXTENDING THE EXPIRES OF THIS
 LICENSE UNDER 1909



811 - CALL BEFORE YOU DIG

COMPLETE WETLAND WORK IN ACCORDANCE WITH IDEO PERMIT #WRP015439.

PREPARED BY: [Redacted]
 CHECKED BY: [Redacted]
 DATE: 08/14/2018
 PROJECT: 171386
 SHEET: C3.1
 SCALE: 1" = 50'

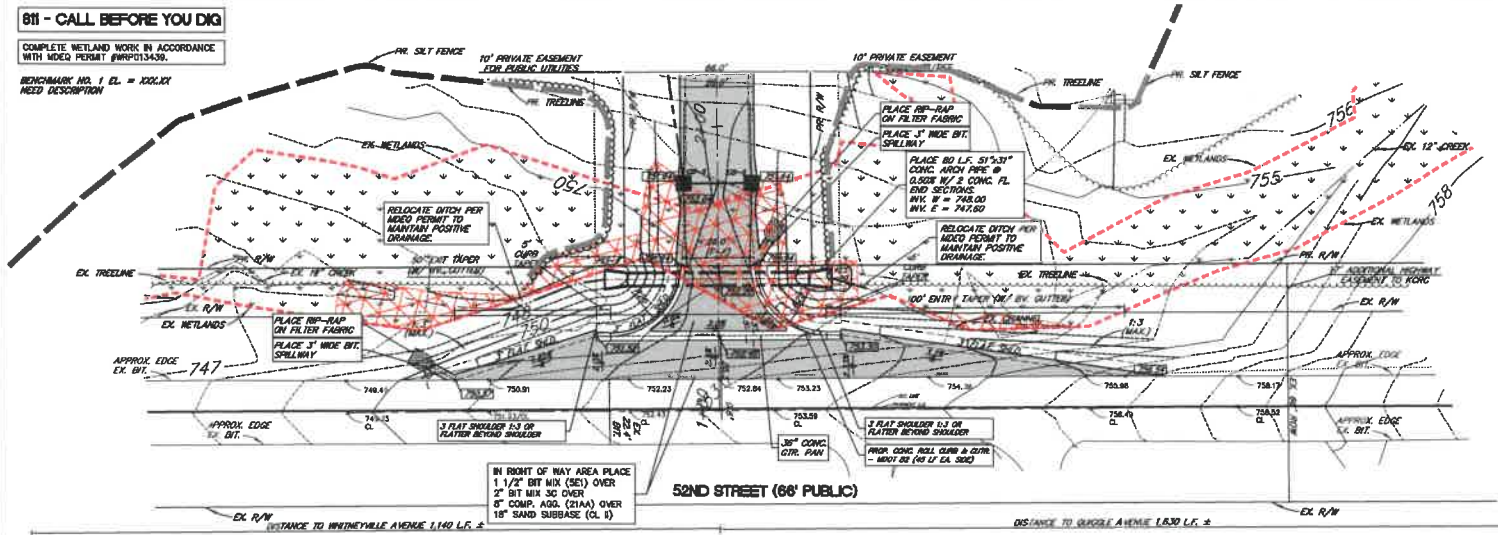


- LEGEND**
- EXISTING CONTOUR LINE
 - EXISTING ST. PAVEMENT
 - PROPOSED STORM SEWER
 - PROPOSED STORMWATER MANAGEMENT BASIN
 - PROPOSED DRAINAGE SWALE
 - EXISTING WETLINE
 - PROPOSED WETLINE
 - PROPOSED BUILDING / HOUSE
 - PROPOSED PAVEMENT
 - PROPOSED DRAINFIELD
 - PROPOSED WETLANDS MITIGATION
 - EXISTING WETLANDS
 - PROPOSED RIGHT-OF-WAY
 - PROPOSED PRIVATE UTILITY EASEMENT
 - PROPOSED BUILDING SETBACK
 - PROPOSED STREETLIGHT
 - 750 PROPOSED MAJOR CONTOUR
 - 751 PROPOSED MINOR CONTOUR
- LEGEND**
- HIGH WOODS - SET
 - ROW ROAD
 - ROAD STRIKE
 - EXISTING DRAINAGE
 - PROPOSED DRAINAGE
 - EXISTING WETLAND
 - PROPOSED WETLAND
 - EXISTING CONCRETE
 - PROPOSED CONCRETE
 - EXISTING ASPHALT
 - PROPOSED ASPHALT
 - EXISTING SAND
 - PROPOSED SAND
 - EXISTING GRAVEL
 - PROPOSED GRAVEL
 - EXISTING OTHER
 - PROPOSED OTHER
 - EXISTING SLOPE
 - PROPOSED SLOPE
 - EXISTING CURB
 - PROPOSED CURB
 - EXISTING GUTTER
 - PROPOSED GUTTER
 - EXISTING SIDEWALK
 - PROPOSED SIDEWALK
 - EXISTING DRIVEWAY
 - PROPOSED DRIVEWAY
 - EXISTING FENCE
 - PROPOSED FENCE
 - EXISTING SIGN
 - PROPOSED SIGN
 - EXISTING LIGHT
 - PROPOSED LIGHT
 - EXISTING OTHER
 - PROPOSED OTHER

CLIENT:
 FREEDOM FARMS FARMS, LLC
 6913 52ND STREET SE
 CASCADE CHARTER TOWNSHIP, KENT COUNTY, MI 49801
PROJECT NO:
 171386
SHEET
 C3.1

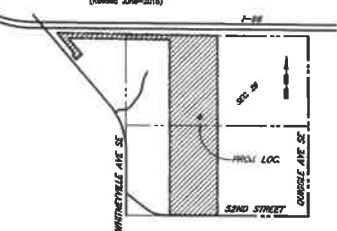
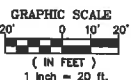
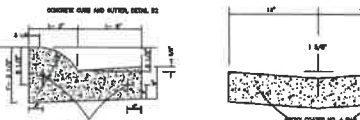
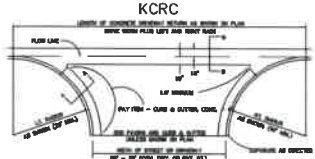
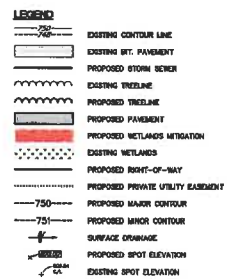
811 - CALL BEFORE YOU DIG

COMPLETE WETLAND WORK IN ACCORDANCE WITH MDEC PERMIT #W00134369.
BENCHMARK NO. 1 E.L. = 100.1X
NEED DESCRIPTION



K.C.R.C. GENERAL NOTES

1. All workmanship and materials shall be according to the current Michigan Department of Transportation (MDOT) Standard Specifications for Construction.
2. Utility easements to be maintained or concrete. Concrete shall be used when the distance between the new curb and the highway right of way, or street edge of travel, is 10 feet or less.
3. Concrete curb and gutter to be 8-2 or as approved by the Kent County Road Commission (K.C.R.C.) Engineer.
4. Where poor soil conditions exist, the depth of the ground and spot subbase between the new curb and existing pavement, shall be determined by the K.C.R.C. Engineer.
5. All concrete sign or debris shall be placed 5' or over into the existing highway right of way.
6. The Kent County Road Commission is to be notified 48 hours prior to the start of construction under existing drainage, and wetlands. This notice is to include all wetland and highway right of way. Concrete forms shall be placed and installed in accordance with the permit or contract. This shall include the necessary traffic signs, cones, and barricades and any other safety devices to insure safety to the public. No late changes are allowed after November 1st to date of work unless approved by the K.C.R.C. Engineer.
7. All ditches and wetlands to be treated and reseeded with seeded sods with an approved turf seed mix, and allowed to grow to a reasonable condition so as to prevent future erosion or reclamation problems. Seeds are 1 on 1 or closer shall be installed.
8. The highway right of way shall not be used for private business purposes.
9. No parking of vehicles, equipment, or material storage is permitted within the highway right of way.
10. The owner must provide for adequate drainage from parking areas, and shall coordinate with the K.C.R.C. Engineer if a permit does not obviate the owner's responsibility.
11. CLOSURE OF HIGHWAY RIGHT OF WAY shall be inspected by the K.C.R.C. Engineer before the start of work.
12. Work from this property shall not drain into County or State Highway right of way.
13. Revisions relating public roadway as necessary to fit other approach, storm sewers, curbs, or grade changes by construction. Stop-out remove all curbs, concrete, and structures as required by the K.C.R.C. Engineer. All work shall be done in accordance with the Department of Transportation Control Permit for any earth change greater than one acre, or within 500 feet of a residential portion of the State Highway right of way.
14. A HARP permit must be obtained for placement and storage of utilities within, on, or across Michigan, electric, water, gas, internet, etc.) in the highway right of way.
15. Contact KRC at 1-800-482-7171 or 811 Area (3) stop prior to the start of construction, including Saturdays, Sundays, and holidays.
16. Additional work (illumination, paving, grading, etc.) may be required by the K.C.R.C. Inspector to correct poor workmanship and/or drainage problems.
17. All work in the highway right of way approved by a commercial/retail/wholesale street approval permit must be completed within one year of permit issuance date.
18. Performance Bonds, Letters of Credit, and Bank Cashiers Checks (in full or in part) must remain in effect through one year after completion of work.
19. The Kent County Road Commission has the right to terminate or revoke any permit if any terms, conditions, or safety requirements as stated in the permit are not followed in a timely manner.
20. A HARP permit must be obtained for placement and storage of utilities within, on, or across Michigan, electric, water, gas, internet, etc.) in the highway right of way.
21. All work in the highway right of way approved by a commercial/retail/wholesale street approval permit must be completed within one year of permit issuance date.
22. All work in the highway right of way approved by a commercial/retail/wholesale street approval permit must be completed within one year of permit issuance date.

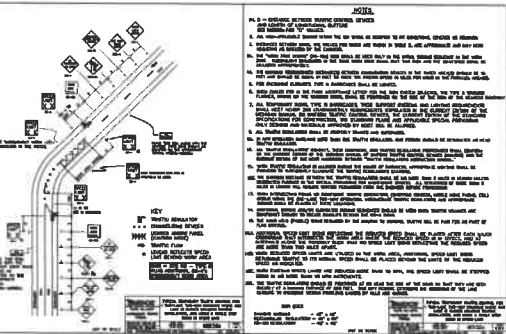
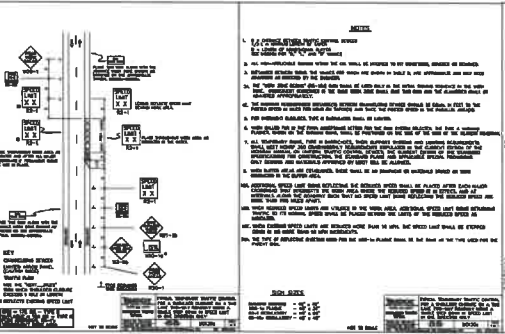
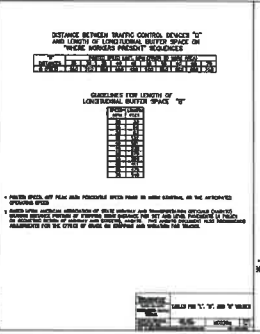


NOTE: THESE PLANS DO NOT ASSURE THE PRESENCE OR LOCATION OF UTILITIES. THE CONTRACTOR SHALL NOTIFY "MISS DIG" TOLL FREE AT 1-800-482-7171 THREE (3) DAYS BEFORE THE START OF CONSTRUCTION, EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS.

NOTE: NO WORK REQUIRING LANE CLOSURES SHALL BE PERFORMED BETWEEN NOVEMBER 1st AND APRIL 1st UNLESS APPROVED BY THE KENT COUNTY ROAD COMMISSION. CONTRACTOR MUST CONTACT AND COORDINATE WITH K.C.R.C. FOR LANE CLOSURE PROCEDURES.

MINIMUM WORKING CLEARANCE TABLE (FEET)

TRAFFIC CONTROL DEVICE	MINIMUM WORKING CLEARANCE (FEET)
1. ADVANCE WARNING SIGN	100
2. STOP SIGN	100
3. AHEAD OF WORK SIGN	100
4. ROAD NARROWED AHEAD SIGN	100
5. ROAD CLOSED AHEAD SIGN	100
6. ROAD CLOSED AHEAD SIGN (FLASHER)	100
7. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS	100
8. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG	100
9. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS	100
10. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100
11. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG	100
12. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100
13. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG	100
14. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100
15. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG	100
16. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100
17. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG	100
18. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100
19. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG	100
20. ROAD CLOSED AHEAD SIGN (FLASHER) WITH RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS AND RED FLAG AND RED LIGHTS	100



Rosien & Associates
SURVEYING AND ENGINEERING

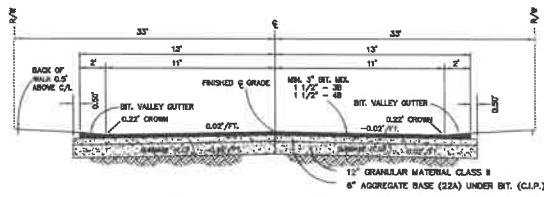
3000 PLAINFIELD AVE. NE TEL: (616) 341-7320
GRAND RAPIDS, MI 49505 FAX: (616) 341-1822

KENT COUNTY ROAD COMMISSION DRIVEWAY PLAN FOR:
FREEDOM FARMS, LLC ATTN: DOUG LEE
9013 52ND STREET SE
ADA, MI 49301

Prop. Address: 8585 52ND STREET SE, ADA, MI
APPROVED: _____ DATE _____
KRC DEPUTY MANAGING DIRECTOR - ENGINEERING
KRC DIRECTOR OF TRAFFIC AND SAFETY _____ DATE _____
PERMIT NO. ISSUED _____ DATE _____

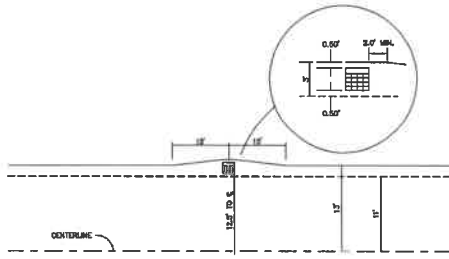
18-082

PLAN NUMBER: _____ NOVEMBER 27, 2018



TYPICAL STREET SECTION

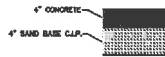
NOT TO SCALE



SET CATCH BASIN IN VALLEY OUTER SECTION 0.40' BELOW CENTERLINE GRADE. GRADE TYPES ARE SHOWN ON THE ROAD PLANS. CENTERLINE OF CATCH BASIN TO BE 12.5' LEFT OR RIGHT OF THE ROAD CENTERLINE.

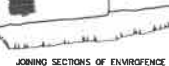
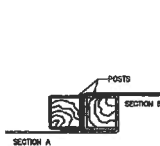
BLACKTOP VALLEY GUTTER CATCH BASIN DETAIL

NOT TO SCALE

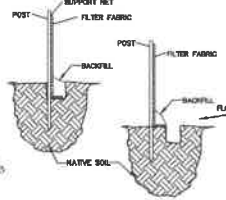


CONCRETE SIDEWALK

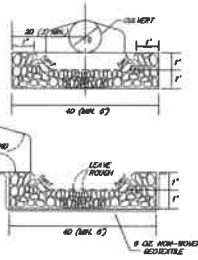
NOT TO SCALE



JOINING SECTIONS OF ENVRIFENCE

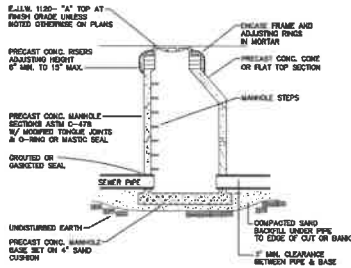


TOE-IN METHODS



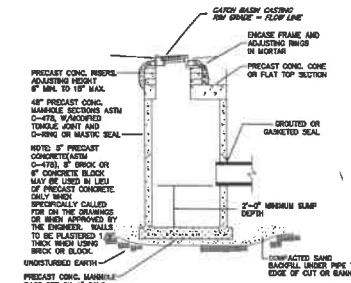
RIPRAP APRON

NOT TO SCALE



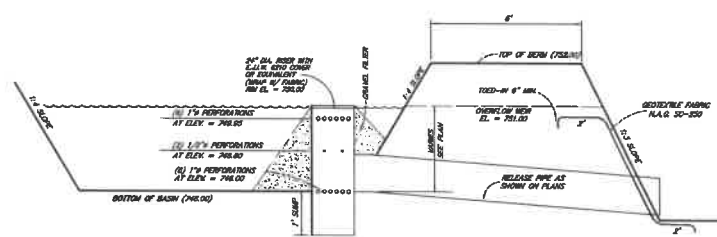
TYPICAL STORM MANHOLE

(SIZE AS SHOWN ON THE PLANS)



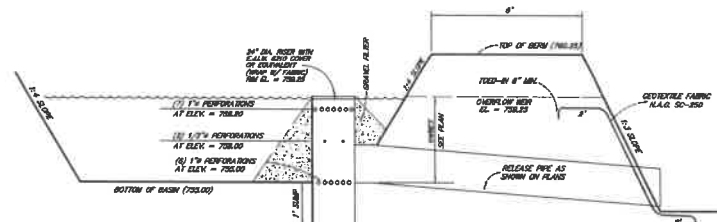
TYPICAL CATCH BASIN

(6" DIA. EXCEPT AS SHOWN ON THE PLANS)



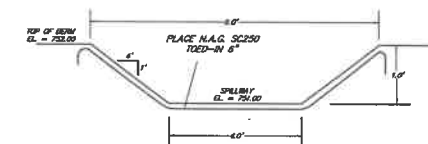
DETENTION BASIN #1: TYPICAL BASIN CROSS SECTION

NOT TO SCALE



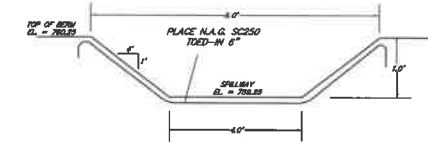
DETENTION BASIN #2: TYPICAL BASIN CROSS SECTION

NOT TO SCALE



DETENTION BASIN #1: OVERFLOW SPILLWAY

NOT TO SCALE



DETENTION BASIN #2: OVERFLOW SPILLWAY

NOT TO SCALE

PROJECT NOTES & SPECIFICATIONS

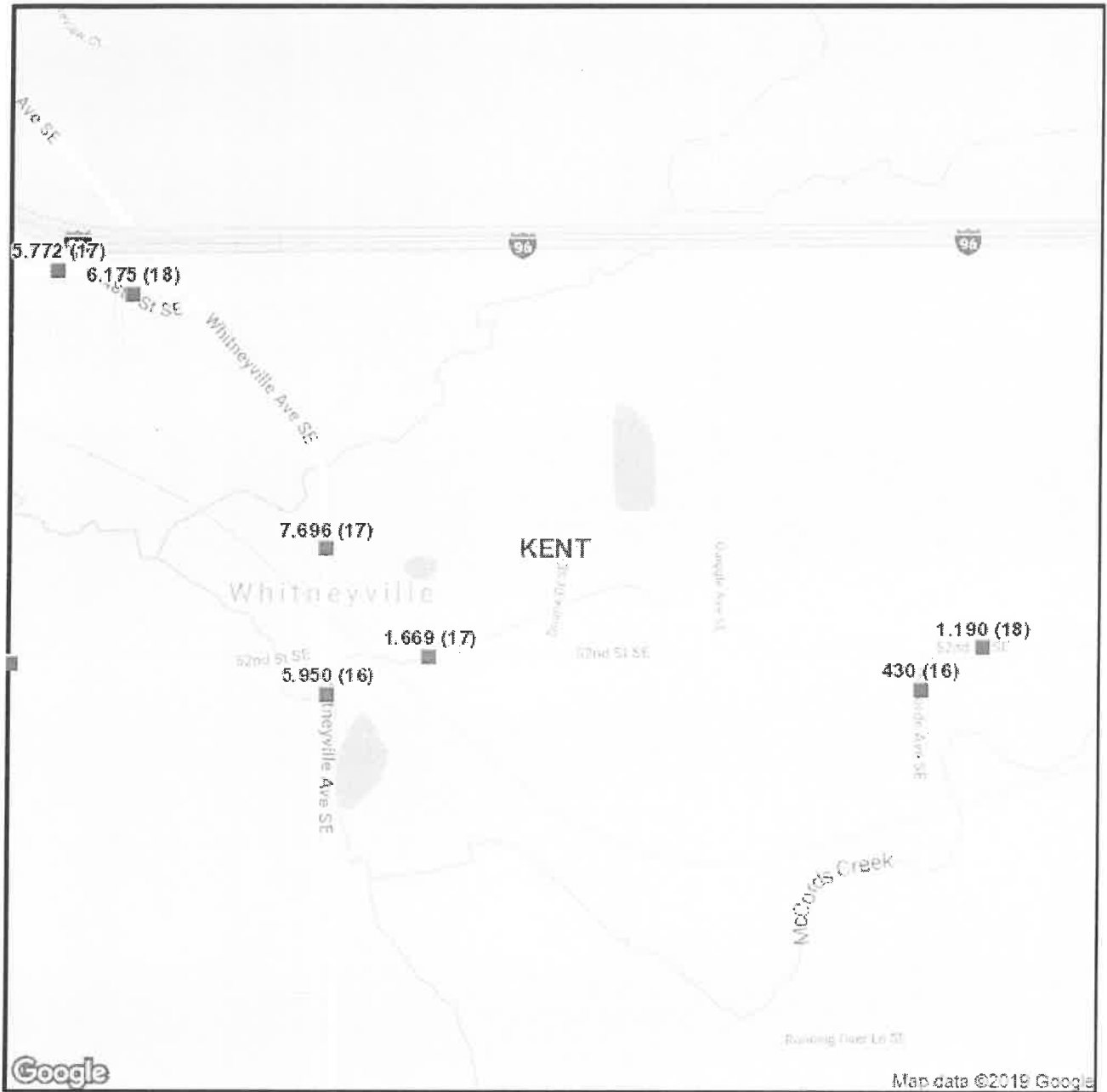
- GENERAL NOTES
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS, CODES, RULES AND REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY STATE AND LOCAL AGENCIES RELATED TO SOIL EROSION AND SEDIMENTATION.
 - ALL ITEMS OF WORK NOT COVERED BY THESE SPECIFICATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE OF MICHIGAN DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION WHICH SHALL BE REFERRED TO AS THE STANDARD SPECIFICATIONS.
 - ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATIONS SHALL BE VERIFIED BY THE FIELD BY THE CONTRACTOR BEFORE BEGINNING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR CONTRACTING AGENCY AT 624-4427 (7) AT LEAST A WORK WEEK PRIOR TO ANY UNDERGROUND CONSTRUCTION.
 - CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER BEFORE WORKING IN ANY AREAS DESIGNATED BY THE ENGINEER AS PROHIBITED AREAS.
 - ROCKERS AND ASSOCIATES P.L.L.C. AS THE DESIGN PROFESSIONAL SHALL NOT BE RESPONSIBLE OR LIABLE FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THE DRAWINGS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONTAIN, OR FOR PROBLEMS WHICH ARISE FROM OTHER PARTIES TO OBTAIN AND FOLLOW THE DESIGN PROFESSIONAL'S GUIDANCE WITH RESPECT TO ANY SPECIAL, OMISSION, INCOMPREHENSIVE, AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.
 - CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY, CONSTRUCTION MEANS, CONTROL, TECHNIQUES, SEQUENCES AND PROCEDURES.
- GENERAL SPECIFICATIONS
- ALL CONSTRUCTION AREAS SHALL BE CLEARED OF ALL TREES, BRUSH, WEEDS, ETC. ALL SPILL MATERIAL IS TO BE DISPOSED IN AREAS DESIGNATED BY THE OWNER AND IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
 - STRIP ALL TOPSOIL AND ORGANIC MATERIAL ON SITE WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT WHERE GRADES ARE TO BE CHANGED, OR IN PLACE TO BE IMPROVED, IN PLACE OF ROOTS, ROCKS AND DEBRIS, AND IS APPROVED BY THE ENGINEER. IT SHALL BE TEMPORARILY STOCKPILED ON SITE FOR LATER USE.
 - CONSTRUCTION ACCESS AND MATERIAL STORAGE IS LIMITED TO THE AREAS DESIGNATED ON THE DRAWINGS OR AS APPROVED BY THE OWNER.
 - WHERE IT IS NECESSARY TO WORK OUTSIDE THE PROPERTY CONTROLLED BY THE OWNER, THE CONTRACTOR SHALL OBTAIN LEGAL AUTHORITY FROM ADJACENT PROPERTY OWNERS TO COMPLETE THE WORK AS OUTLINED IN THESE DOCUMENTS.
 - ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE BROUGHT TO FINISH GRADERS AS SHOWN ON THE DRAWINGS. ALL AREAS DISTURBED SHALL BE RESTORED WITH A MINIMUM OF 3" OF TOPSOIL, SEEDING AND MULCH. USE 220 POUNDS PER ACRE OF CLASS A SEED AS LISTED BY THE STANDARD SPECIFICATIONS OR APPROVED EQUAL.
 - THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION ON THE HEDD FOR IMPORTED OR EXPORTED MATERIAL. THE PROPOSED GRADING PLAN MAY NOT PROVIDE FOR A "BALANCED" SITE.
 - ALL AREAS DISTURBED DUE TO SITE ACCESS SHALL BE RESTORED TO THE PRECONSTRUCTION CONDITION OR BETTER.
 - ALL FILL AND CONSTRUCTION ALL MATERIAL SHALL BE CLEAN FREE OF LARGE ROCKS, DEBRIS AND ORGANIC MATERIAL. COMPACT ALL BACKFILL TO 90% OF MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM-D-1587. BACKFILL SHALL BE PLACED IN A MINIMUM OF 12" LIFTS.
 - STORM SEWER MANHOLE 18" DIA. MANHOLE COVERING NOTES: CATCH BASIN TO BE 4" DIA. UNLESS OTHERWISE NOTED. STORM SEWER INLETS TO BE 2" DIA. ALL CATCH BASIN AND INLETS SHALL HAVE A 2" DEEP SLUMP. CATCH BASINS IN VALLEY OUTER SECTION SHALL BE 30" DIA. (SEE 22A) AND CATCH BASINS IN VALLEY OUTER OR GUTTER SECTION SHALL BE 30" DIA. (SEE 22A). ALL CATCH BASIN AND INLETS SHALL HAVE A 2" DEEP SLUMP. STORM SEWER (18" DIA) SHALL BE 30" DIA. UNLESS OTHERWISE NOTED. CATCH BASIN TO BE 4" DIA. UNLESS OTHERWISE NOTED. STORM SEWER INLETS TO BE 2" DIA. ALL CATCH BASIN AND INLETS SHALL HAVE A 2" DEEP SLUMP. ALL EXPOSED PIPE ENDS SHALL HAVE END SECTIONS BUILT.

DESIGN BY: [Firm Name]
 APPROVED BY: [Signature]
 REGISTERED PROFESSIONAL ENGINEER
 LICENSE NO. 20181 FOR THE STATE OF MICHIGAN
 DATE: 10/18/2018

PREPARED BY: [Firm Name]
 REGISTERED PROFESSIONAL ENGINEER
 LICENSE NO. 20181 FOR THE STATE OF MICHIGAN
 DATE: 10/18/2018

CLIENT: FREEDOM BEANS FARM, LLC
 ATTN: DOUG LEE
 8683 SAND STREET SE
 ADA, MI 48801

PROJECT NO. 171366
 SHEET CS.1



Google

Map data ©2019 Google

0 1500 3000



Feet



TCDS Locations

- Short
- Continuous
- WIM
- Located Short
- Located Continuous
- Located WIM



2/26/2019



February 27, 2019
Project No. 170168

Mr. Steve Peterson
Cascade Charter Township
2865 Thornhills Avenue, SE
Grand Rapids, MI 49546-7192

Re: Freedom Farms
Site Plan Review

Dear Steve:

We have reviewed the site plan for Freedom Farms, prepared by Roosien & Associates. The current site plan and basis of this review are dated October 29, 2018. The proposed project is a new private road, lot split, and associated stormwater improvements. The site is located in the Thornapple River watershed, sub-drainage district Cascade Southeast

Stormwater and Drainage

Flood Control

The Cascade Charter Township Storm Water Ordinance (SWO), Section 1.04, states the Ordinance shall apply to all development that requires any permit for work which will alter the stormwater drainage characteristics of the development site. The site is located in Stormwater Management Zone A, which requires retention of the 100-year storm event and infiltration to the greatest extent possible. Where soil conditions or other factors do not allow for adequate infiltration, the SWO requires detention of the 25-year storm event with a controlled release and a direct connection for stormwater runoff for the 100-year storm event, or detention of the 100-year storm event. The SWO also requires the first 0.5-inch of stormwater runoff be detained and released over a 24-hour period (Water Quality Control) and the 2-year storm event release rate be limited to 0.05 cfs/acre (Bank Erosion Control).

The applicant provided the results of a geotechnical investigation including soil borings and infiltration tests. The soil borings indicate the existing soils at the proposed detention basin locations are predominately heavy with loamy sand and clay present. Four double-ring infiltrometer tests were performed with results ranging from 0.4 to 8.3 inches/hour. It was determined the existing soils are not favorable for stormwater infiltration.

Therefore, the stormwater detention basins were designed with a controlled release for the 100-year storm event. Two detention basins are proposed for the site, one at the south end of the site and the other at the north end. Stormwater runoff from the development will be collected by a series of catch basins and conveyed by storm pipe to the detention basins. The proposed stormwater management design is in accordance with the SWO.

Water Quality Control and Bank Erosion Control

The SWO requires the first 0.5 inch of stormwater runoff be detained and infiltrated where conditions permit, or released over a 24-hour period, and the 2-year storm event release rate be limited to 0.05 cfs/acre. The proposed detention basins include an outlet control structure with three separate orifice openings, one each for the water quality control, bank erosion control, and flood control discharges. The applicant provided design details and stormwater calculations indicating this SWO requirement has been met.

Stormwater Runoff

The applicant provided stormwater calculations to size the proposed detention basins. All stormwater runoff from the private street and developed site will discharge to the detention basin. Therefore, the site will not see an increase in rate of stormwater leaving the site.

Z:\2017\170168\WORK\CORR\LT_PETERSON_FREEDOM_FARMS_2019_0227.DOCX

1515 Arboretum Drive, SE
Grand Rapids, Michigan 49546

616.575.3824
www.ftch.com

Fishbeck, Thompson, Carr & Huber, Inc.
engineers | scientists | architects | constructors



Drainage Plan

The applicant has submitted drawings, calculations, and additional documentation as required in the SWO Section 2.03, Drainage Plan. Please refer to the attached checklist for items and comments on each item. Please note a maintenance agreement is required before construction begins. The agreement should be submitted to the Township for review. The maintenance agreement and plan should include at a minimum removal of accumulated sediment from catch basins, detention basins, and outlet structures as well as landscape maintenance of the detention basins.

Private Street Requirements

The proposed private street is required to meet the design standards outlined in the Township Ordinance for private streets. FTCH reviewed the proposed private road for right-of-way width, road and travel lane width, road grade, pavement cross section including aggregate base and subbase design, stormwater drainage, etc. The proposed private road was found to meet the requirements outlined in the Township Ordinance for private streets.

Utilities

The residential lots will have onsite water wells and septic systems. A permit from the Kent County Health Department will be required prior to construction of the houses taking place. Construction of the private road may take place without the health department permit.

Soil Erosion and Sedimentation Control

Soil Erosion and Sedimentation Control (SESC) measures are provided on the plan drawings. The applicant has included silt fence along the limits of disturbance, silt sacks in catch basins, and erosion control matting on disturbed slopes. SESC falls under the review and approval of the Kent County Road Commission and a permit is required before construction can begin. The SESC measures indicated on the drawings appear appropriate given the expected work.

Summary

The proposed stormwater management design meets the Township SWO requirements for new developments. The applicant will need to apply for and obtain an SESC permit prior to road construction. A permit from the Kent County Health Department will also be required for the onsite water wells and septic systems prior to house construction. We recommend approval of the site plan from an engineering standpoint. If you have any questions or require additional information, please contact me at 616.464.3786 or nrtorrey@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, appearing to read 'N. Torrey', is positioned above the printed name.

Nathan R. Torrey, PE

jlk

Attachment

By email

cc: Michael L. Berrevoets, PE – FTCH



Cascade Charter Township

Storm Water Ordinance, Ordinance 7 of 2002, as amended by Ordinance No. 2 of 2008, 5/14/2008

Reviewing Engineer Comments are Italicized

OK – Received and Acceptable

NA – Not Applicable

NR – Not Received, Needs Follow-up, See Comments

Freedom Farms

Drainage Plan Checklist

- OK (1) Location of the development site and water bodies that will receive storm water runoff
Stormwater runoff from the new private street and developed area will be collected in a series of catch basins and discharged to one of two detention basins.

- OK (2) Existing and proposed topography of the development site, including the alignment and boundary of the natural drainage courses, with contours having a maximum interval of one foot (using USGS datum). The information shall be superimposed on the pertinent Kent County soil map
Existing and proposed contours for the private drive have been provided.

- OK (3) Development tributary area to each point of discharge from the development
Stormwater calculations and tributary areas were provided by the applicant.

- OK (4) Calculations for the final peak discharge rates
The applicant provided calculations for the design of the onsite storm sewer system and detention basins.

- OK (5) Calculations for any facility or structure size and configuration
The applicant provided calculations for the design of the onsite storm sewer system and detention basins.

- OK (6) Drawing showing all proposed storm water runoff facilities with existing and final grades
The applicant provided a utility plan showing all proposed stormwater runoff facilities.

- OK (7) The sizes and locations of upstream and downstream culverts serving the major drainage routes flowing into and out of the development site. Any significant off-site and on-site drainage outlet restrictions other than culverts should be noted on the drainage map
There are no culverts or significant offsite flows indicated on the site plan.

- OK (8) An implementation plan for construction and inspection of all storm water runoff facilities necessary to the overall drainage plan, including a schedule of the estimated dates of completing construction of the storm water runoff facilities shown on the plan and an identification of the proposed inspection procedures to ensure that the storm water runoff facilities are constructed in accordance with the approved drainage plan
A construction schedule was included on the plans.

- OK (9) Plan to ensure the effective control of construction site storm water runoff and sediment track-out onto roadways
The SESC measures shown on the plan appear appropriate given the expected work. SESC falls under the review and approval of the KCRC and a permit is needed before construction can begin.



- OK (10) Drawings, profiles, and specifications for the construction of the storm water runoff facilities reasonably necessary to ensure that storm water runoff will be drained, stored, or otherwise controlled in accordance with this ordinance
The applicant provided calculations and design details for construction of the onsite storm sewer system.
- NR (11) Maintenance agreement, in form and substance acceptable to the Township, for ensuring maintenance of any privately owned storm water runoff facilities. The maintenance agreement shall include the developer's written commitment to provide routine, emergency, and long-term maintenance of the facilities and, in the event that the facilities are not maintained in accordance with the approved drainage plan, the agreement shall authorize the Township to maintain any on-site storm water runoff facility as reasonably necessary, at the developer's expense
Maintenance agreement was not provided and is required.
- OK (12) Name of the engineering firm and the registered professional engineer that designed the drainage plan and that will inspect final construction of the storm water runoff facilities
- NA (13) All design information must be compatible for conversion to Grand Valley Regional Geographic Information System (REGIS)
This is a privately owned system and will not be uploaded to REGIS.
- OK (14) Other information necessary for the Township to verify that the drainage plan complies with the Township's design and performance standards for drains and storm water management systems

Project Name: **Hickory Pointe Woods**
 Project Number: **171386**
 Date: **2/13/2019**

Project Site Area: 43.93 ac
Min. Required Open Space: 50%

Parcel Coverage:

Lot	Size (sft)	Size (ac)	%
1	51,652	1.19	2.7%
2	50,154	1.15	2.6%
3	50,139	1.15	2.6%
4	50,125	1.15	2.6%
5	50,110	1.15	2.6%
6	50,101	1.15	2.6%
7	50,042	1.15	2.6%
8	50,106	1.15	2.6%
9	50,120	1.15	2.6%
10	50,135	1.15	2.6%
11	50,150	1.15	2.6%
12	65,661	1.51	3.4%

Project Site Area:	1,913,742 sft
	43.93 acres
Non Developable Areas:	
<u>Right-of-way</u>	
Existing	59,343 sft
Proposed	80,097 sft
	<u>3.20 ac</u>
<u>Wetlands</u>	347,244 sft
	<u>7.97 ac</u>
<u>100-year Floodplains</u>	- sft
(50%)	- sft
	- ac
<u>Steep Slopes</u>	81,022 sf
	<u>1.86 ac</u>
<u>Moderate Slopes</u>	67,082 sft
(50%)	33,541 sft
	<u>0.77 ac</u>
<u>Water Bodies</u>	- sf
	- ac
Developable Acreage:	1,312,495 sft
	30.13 ac
Open Space:	1,155,806 sft
	26.53 ac
less Undevelopable Land in OS:	
Wetlands	(299,759) sft
100-year Floodplain	- sft
Steep Slopes	(81,022) sft
Moderate Slopes	(33,541) sft
Water Bodies	- sft
Open Space (total):	17.02 ac
Open Space vs Developable Acreage:	56%
Current Zoning:	ARC
Min. 50% Open Space:	Yes
Therefore, use:	
Minimum Lot Width:	115 ft
Minimum Lot Area:	50,000 sft

INDEX OF SHEETS

SHEET C1.0	EX. CONDITIONS, REMOVALS + SESC PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.0	PRELIMINARY SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.1	OVERALL SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.0	STORM MGMT. + GRADING PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.1	PRELIMINARY ROAD GRADING PLAN PROPOSED 12-UNIT RESIDENTIAL
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN <u>WITH</u> SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN BEFORE SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.1	DETAILS PROPOSED RESIDENTIAL SITE CONDO

FREEDOM REIGNS FARM, LLC RESIDENTIAL SITE CONDO DEVELOPMENT

TABLE OF CONTENTS

- 1) SUBDIVISION ORDINANCE RESPONSES
- 2) KENT COUNTY HEALTH DEPT REVIEW
- 3) PROPOSED COVENANTS & DEED RESTRICTIONS
- 4) DEQ NOTICE OF AUTHORIZATION
- 5) STORMWATER MANAGEMENT DESIGN SUMMARY
- 6) ENVIRONMENTAL- WETLAND DETERMINATION
- 7) PROPOSED CONSTRUCTION SCHEDULE

6 Sets Attached for Review/Approval

INDEX OF SHEETS

SHEET C1.0	EX. CONDITIONS, REMOVALS + SESC PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.0	PRELIMINARY SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.1	OVERALL SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.0	STORM MGMT. + GRADING PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.1	PRELIMINARY ROAD GRADING PLAN PROPOSED 12-UNIT RESIDENTIAL
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN <u>WITH</u> SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN BEFORE SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.1	DETAILS PROPOSED RESIDENTIAL SITE CONDO

Cascade Township

Article III

Responses to Section 3.2

- a. Hickory Pointe Woods
- b. See site plan prints – sheet C1.1
- c. See attached "INDEX OF SHEETS" next page
- d.

E 1/2 W 1/2 SE 1/4 ALSO N 66 FT OF W 1/2 W 1/2 SE 1/4 ALSO PART OF NE 1/4 SW 1/4 COM AT CEN OF SEC TH W ALONG E&W 1/4 LINE TO CL OF WHITNEYVILLE AVE TH SELY ALONG CL OF SD AVE 526 FT TH NELY PERP TO CL OF SD AVE 141 FT TH NWLY PAR WITH CL OF SD AVE TO A PT 66 FT S /MEAS PERP TO/ FROM E&W 1/4 LINE TH E PAR WITH E&W 1/4 LINE TO N&S 1/4 LINE TH N TO BEG * SEC 26 T6N R10W 43.68 A.

Common address: 8585 52nd Street SE, Ada, MI

PPN: 41-19-26-400-015

- e. Douglas Lee [Cell 616.901.3416]

8613 52nd St. SE Ada, MI 49301

Kevin Roosien P.S.

Roosien & Associates, P.L.L.C.
5055 Plainfield Avenue NE Tele. (616) 361-7220
Grand Rapids, MI 49525 Fax (616) 361-1822
<http://www.roosien-assoc.com>
kevin@roosien-assoc.com

Matthew MacGregor

King & MacGregor Environmental, Inc.
2520 Woodmeadow Dr. SE
Grand Rapids, MI 49546
Office (616) 957-1231
Cell (616) 822-9932

- f. SEC 26 T6N R10W, Cascade Township, Kent County
- g. N/A
- h. 12 Residential Single Family Homes
- i. See Site Plan Drawings as shows open space- SHEET C2.1
- j. See Site Plan Drawings- SHEET C2.1

INDEX OF SHEETS

SHEET C1.0	EX. CONDITIONS, REMOVALS + SESC PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.0	PRELIMINARY SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C2.1	OVERALL SITE PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.0	STORM MGMT. + GRADING PLAN PR. RESIDENTIAL SITE CONDO
SHEET C3.1	PRELIMINARY ROAD GRADING PLAN PROPOSED 12-UNIT RESIDENTIAL
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN <u>WITH</u> SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.0	KENT CTY ROAD COMMISSION DRIVEWAY PLAN BEFORE SIGNATURES FROM KENT COUNTY COMMISSION
SHEET C5.1	DETAILS PROPOSED RESIDENTIAL SITE CONDO

FREEDOM REIGNS FARM, LLC RESIDENTIAL SITE CONDO DEVELOPMENT

TABLE OF CONTENTS

- 1) SUBDIVISION ORDINANCE RESPONSES
- 2) KENT COUNTY HEALTH DEPT REVIEW
- 3) PROPOSED COVENANTS & DEED RESTRICTIONS
- 4) DEQ NOTICE OF AUTHORIZATION
- 5) STORMWATER MANAGEMENT DESIGN SUMMARY
- 6) ENVIRONMENTAL- WETLAND DETERMINATION
- 7) PROPOSED CONSTRUCTION SCHEDULE

Cascade Charter Township

Article III

Responses to Section 3.2

- a. Hickory Pointe Woods
- b. See site plan prints – sheet C1.1
- c. See attached "INDEX OF SHEETS" next page
- d.

E 1/2 W 1/2 SE 1/4 ALSO N 66 FT OF W 1/2 W 1/2 SE 1/4 ALSO PART OF NE 1/4 SW 1/4 COM AT CEN OF SEC TH W ALONG E&W 1/4 LINE TO CL OF WHITNEYVILLE AVE TH SELY ALONG CL OF SD AVE 526 FT TH NELY PERP TO CL OF SD AVE 141 FT TH NWLY PAR WITH CL OF SD AVE TO A PT 66 FT S /MEAS PERP TO/ FROM E&W 1/4 LINE TH E PAR WITH E&W 1/4 LINE TO N&S 1/4 LINE TH N TO BEG * SEC 26 T6N R10W 43.68 A.

Common address: 8585 52nd Street SE, Ada, MI

PPN: 41-19-26-400-015

- e. Douglas Lee [Cell 616.901.3416]

8613 52nd St. SE Ada, MI 49301

Kevin Roosien P.S.

Roosien & Associates, P.L.L.C.

5055 Plainfield Avenue NE Tele. (616) 361-7220

Grand Rapids, MI 49525 Fax (616) 361-1822

<http://www.roosien-assoc.com>

kevin@roosien-assoc.com

Matthew MacGregor

King & MacGregor Environmental, Inc.

2520 Woodmeadow Dr. SE

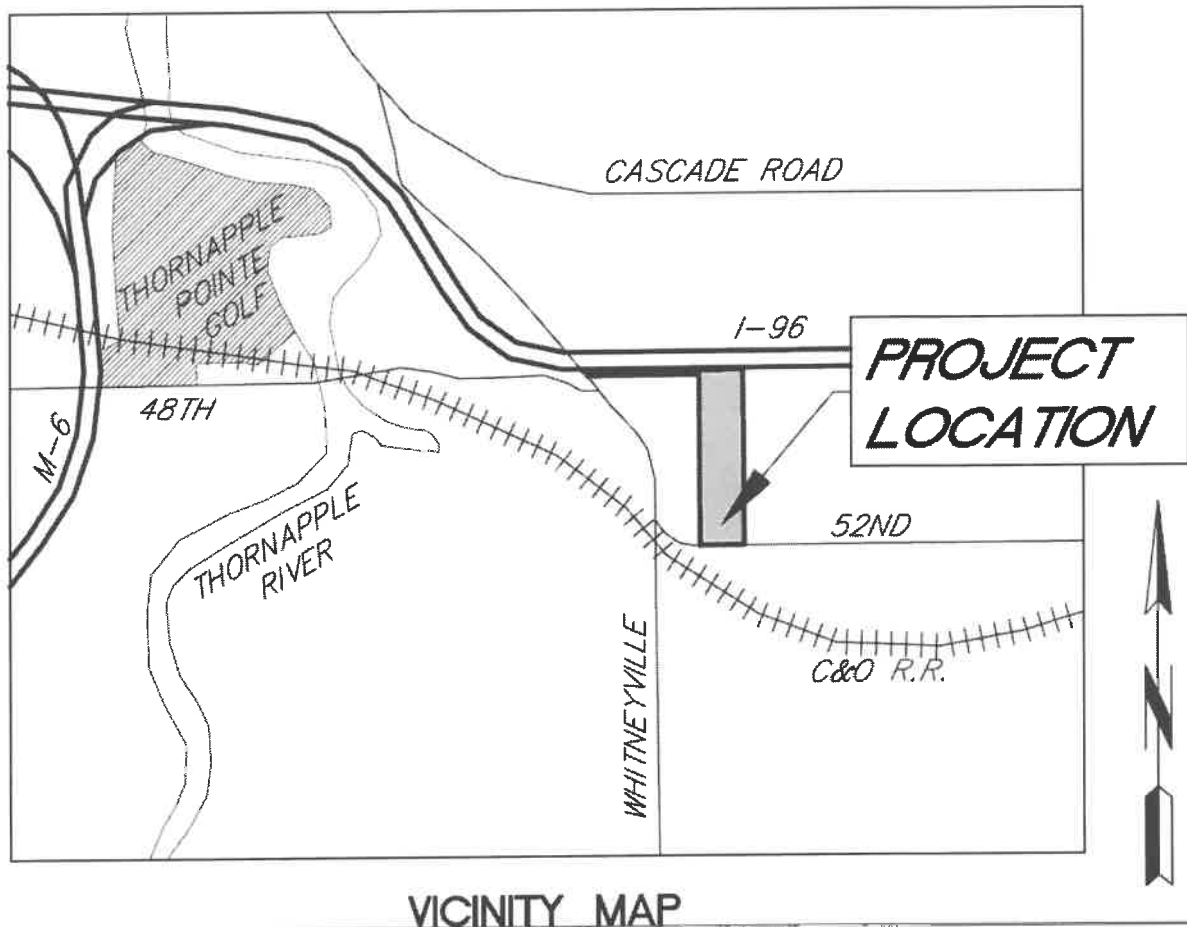
Grand Rapids, MI 49546

Office (616) 957-1231

Cell (616) 822-9932

- f. SEC 26 T6N R10W, Cascade Township, Kent County
- g. N/A
- h. 12 Residential Single Family Homes
- i. See Site Plan Drawings as shows open space- SHEET C2.1
- j. See Site Plan Drawings- SHEET C2.1

k. Surrounding Area Map Location



- l. Current Land use – Vacant Land, Zoning- Agricultural Rural, Conservation/R1 Residential
- m. Street Name: Hickory Pointe Woods – Private, See site plans Sheet C2.0 AND Kent County Road Commission Permit (next page)
- n. See included Wetland Permit-Tab Sections in Notebook:
“DEQ Notice of Authorization” AND
“ENVIRONMENTAL-WETLAND DETERMINATION”
- o. See included Soil Erosion Plan-Tab Section in Notebook:
“STORMWATER MGT DESIGN SUMMARY”
- p. See Site Plan-SHEET C2.1
- q. See Site Plan Sheet C2.1 for Private open space- 26.53 acres
- r. See Site Plan Sheet C1.0
- s. None Proposed



Kent County Road Commission
 1500 Scribner NW
 Grand Rapids, MI 49504-0000
 Phone: 616-242-6920
 Fax: 616-336-4397

Permit No. 2019-040003
 Issue Date 01/24/2019

**PERMIT TO CONSTRUCT, OPERATE, USE AND/OR MAINTAIN
 WITHIN THE RIGHT-OF-WAY OF; OR TO CLOSE, A COUNTY ROAD
 Commercial Dwy**

APPLICANT	Doug Lee (Freedom Reins LLC) 8613 52 nd St SE Ada, MI 49301-0000	CONTRACTOR	
-----------	--	------------	--

Applicant/Contractor requests a permit for the following work within the right of way of a county road:
Commercial - Commercial Dwy

LOCATION: County Road 8585 52nd St Between _____ And _____
 Municipality: ADA TOWNSHIP Section _____ Side of Road _____ Property ID _____
 DATE: Work to begin on 1/24/19 Work to be completed by 1/31/20 Plat _____ Lot _____

I certify and acknowledge that (1) the information contained in this application is true and correct, (2) the commencement of the work described in this application shall constitute acceptance of the permit as issued, including all terms and conditions thereof and, (3) if this permit is for commercial or residential driveway work, I am the legal owner of the property that this driveway will serve, or I am the authorized representative.

PERMIT

The term "Permit Holder" in the terms and conditions set forth on the reverse side hereof, refers to the applicant and the contractor, where applicable. By performing work under this permit, the Permit Holder acknowledges and agrees that this permit is subject to all the rules, regulations, terms and conditions set forth herein, including on the reverse side hereof. Failure to comply with any of said rules, regulations, terms and conditions shall render this permit NULL AND VOID.

REQUIREMENTS	FEE TYPE	AMOUNT	RECEIPT NO	DATE		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
					Letter of Credit	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
					Surety Bond <u>20,000</u>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
					Retainer Letter	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
					Approved Plans on File <u>18-082</u>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
					Certificate of Insurance	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
					Attachments/Supplemental Specifications	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
	Other To Be Billed					

OTHER REQUIREMENTS:

WORK TO BE COMPLETED AS PER ATTACHED APPLICATION. PROPER TEMPORARY TRAFFIC SIGNING TO BE IN ACCORDANCE WITH CURRENT MMUTCD MANUAL. FORMS TO BE CHECKED BEFORE CONCRETE IS POURED.

TERMS AND CONDITIONS

1. **Specifications.** All work performed under this permit must be done in accordance with the application, plans, specifications, maps and statements filed with the County Road Commission ("Road Commission") and must comply with the Road Commission's current procedures and regulations on file at its offices and the current MDOT Standard Specifications for Construction, if applicable.
2. **Fees and Costs.** The Permit Holder shall be responsible for all costs incurred by the Road Commission in connection with this permit and shall deposit estimated fees and costs as determined by the Road Commission, at the time the permit is issued.
3. **Bond.** The Permit Holder shall provide a cash deposit, irrevocable letter of credit or bond in a form and amount acceptable to the Road Commission at the time permit is issued.
4. **Insurance.** The Permit Holder shall furnish proof of general liability insurance in amounts not less than \$1,000,000 each occurrence and general aggregate, proof of automobile liability in amounts not less than \$1,000,000 combined single limit for each accident, bodily injury per accident, and property damage per accident, and in an amount not less than \$500,000 for bodily injury per person. Such proof of insurance shall include a valid certificate of insurance demonstrating that the Road Commission is an additional insured party on the policy. Such insurance shall cover a period not less than the term of this permit and shall provide that it cannot be cancelled without 30 days advance written notice to the Road Commission, by certified mail, first-class, return receipt requested. This permit is invalid if insurance expires during the authorized period of work described herein.
5. In addition to any other liability or obligation that may otherwise exist, the Permit Holder, to the fullest extent permitted by law, shall indemnify and hold harmless the Road Commission and its agents and employees from and against all claims, damages, losses, and expenses including, but not limited to, attorneys' fees, arising out of or resulting from the performance of the work performed including claims, damages, losses, and expenses attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, but only to the extent caused by the fault, negligent acts, or omissions of the Permit Holder, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by the parties indemnified hereunder. This obligation does not include an obligation to indemnify the parties indemnified hereunder for their sole negligence and shall not be construed to negate or modify other rights or obligations of indemnity that otherwise exist as to the parties or persons described herein.
6. **Miss Dig.** The Permit Holder must comply with the requirements of Act 53 of Public Acts of 1974, as amended. CALL MISS DIG AT (800) 482-7171 or www.missdig.org AT LEAST THREE (3) FULL WORKING DAYS, BUT NOT MORE THAN FOURTEEN (14) CALENDAR DAYS, BEFORE YOU START WORK. The Permit Holder assumes all responsibility for damage to or interruption of underground utilities.
7. **Notification of Start and Completion of Work.** The Permit Holder must notify the Road Commission at least 48 hours before starting work, when work is completed, and additionally as directed by the Road Commission.
8. **Time Restrictions.** All work shall be performed Mondays through Fridays between and unless written approval is obtained from the Road Commission, and work shall be performed only during the period set forth in this permit. Perform no work except emergency work, unless authorized by the Road Commission on Saturdays, Sundays, or from on the day proceeding until the normal starting time the day after the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.
9. **Safety.** Furnish, install and maintain all necessary traffic controls and protection during Permit Holder's operations in accordance with the Manual of Uniform Traffic Control Devices, Part 6 and any supplemental specifications set forth herein.
10. **Restoration and Repair of Road.** The construction, operation and maintenance of the activity covered by this permit shall be performed by the Permit Holder without cost to the Road Commission unless specified herein. The Permit Holder shall also be responsible for the cost of restoration and repair of the right-of-way determined by the Road Commission to be damaged as a result of the activity which is the subject of this permit. Restoration shall meet or exceed conditions when work is commenced and be in accordance with specifications. The Permit Holder shall be responsible for costs incurred by the Road Commission for emergency repairs performed by or on behalf of the Road Commission for the safety of the motoring public. Said repairs shall be performed with or without notice to the Permit Holder if immediate action is required. This determination shall be in the sole and reasonable opinion of the Road Commission.
11. **Limitation of Permit.** Issuance of this permit does not relieve Permit Holder from meeting any and all requirements of law, or of other public bodies or agencies. The Permit Holder shall be responsible for securing and shall secure any other permits or permission necessary or required by law from cities, villages, townships, corporations, property owners, or individuals for the activities hereby permitted. Any work not described by the application, including the time and place thereof, is strictly prohibited in the absence of the application for and issuance of an additional permit or amendment to this permit.
12. **Revocation of Permit.** This permit may be suspended or revoked at will, and the Permit Holder shall surrender this permit and alter, relocate or remove its facilities at its expense at the request of the Road Commission. It is understood that the rights granted herein are revocable at the will of the Road Commission and that the Permit Holder acquires no rights in the right-of-way and expressly waives any right to claim damages or compensation in case this permit is revoked.
13. **Assignability.** This permit is not assignable and not transferable unless specifically agreed to by the Road Commission.
14. **Authority.** The statutory authority of the Road Commission to require compliance with permit requirements is predicated upon its jurisdictional authority and is set forth in various statutes including, without limitation and in no particular order, MCL

t. See Site Plan Sheet C2.0

TABLE of Hickory Pointe Woods Lots	
Proposed Lot Number	Lot Area
1	51,652 SF
2	50,154 SF
3	50,139 SF
4	50,125 SF
5	50,110 SF
6	50,101 SF
7	50,042 SF
8	50,106 SF
9	50,112 SF
10	50,135 SF
11	50,150 SF
12	65,661 SF

u. See Site Plan(s)- SHEET C1.0; SHEET C3.0

v. Water supply- well; sewage disposal- septic; See Site Plan Sheet C2.0

w. 6 copies of proposed protective covenants and deed restrictions-
INCLUDED/Attached in Tab Section in Notebook:
"Proposed Covenants & Deed Restrictions"

x. See Site Plan Sheet C2.0

y. Lot area of smallest = 50,042 SF Average= 51,540 SF

z. See Site Plan Sheet C2.0; Sheet C2.1; Sheet C3.0

aa. Total Acreage=44.5 Number of Residential Lots=12, Typical Lot size=298'x168'
26.53 Acres in Parks= See Site Plan Sheets C2.0; C2.1; C3.0

bb. See Site Plan Sheets C1.0; C2.0; C3.0; C3.1

cc. See Site Plan Sheets C1.0; C3.0

dd. 1) Existing Drainage plan Sheet C3.0

2) Proposed Grading Plan Sheet C3.0

3) Developable Land Area Plan Sheet C2.1

4) Proposed Utility plan (sewer, water, storm) Sheet C2.0, C3.0

5) Site Plan Sheet C1.0

6) Soil Erosion Plan Sheet C1.0

KENT COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH
700 Fuller Avenue N.E.
Grand Rapids, Michigan 49503-1918
Phone: 616-632-6900
Fax: 616-632-6892
Email: KCEHmail@kentcountymi.gov
Website: www.accesskent.com



Adam London, RS, MPA
Administrative Health Officer

January 15, 2019

Doug Lee
8585 52nd St. SE
Ada, MI 49301

RE: Proposed Hickory Pointe Woods Site Condominium, Units 1-12
Single Family Residential
Cascade Charter Township

Dear Mr. Lee:

The Environmental Health Division of the Kent County Health Department (KCHD) has completed its review of the submittal for the Proposed Hickory Pointe Site Condominium. This review was conducted in accordance with Michigan Land Division Act PA 288 of 1967 Section 560.105.

Prior to issuing a final approval, we request the following statements be incorporated into the Master Deed and Bylaws.

In addition, upon completion of roads, utilities, and grading, this Department may request additional soil evaluations to determine that site conditions still exist after construction activities. Failure to maintain the site as approved will result in modification or reversal of this preliminary approval.

WASTEWATER DISPOSAL SYSTEMS

- KCHD may require site evaluations prior to issuing septic system permits when the proposed initial and/or replacement wastewater disposal system is outside of those areas already approved and on file with KCHD
- With the application to obtain a permit from KCHD for a septic tank and disposal areas, the applicant will submit to KCHD a lot development plan drawn to scale that will locate the dwelling, drives and right-of-ways, utilities, unit boundary lines, building site and proposed septic location. As part of the application, KCHD may require a topographical map showing existing and proposed contours. Contour intervals shall not exceed two (2) feet.
- Utilities, buildings, drives, or other structures that may interfere with the installation and operation of the on-site sewage disposal system shall not be permitted within the designated initial and replacement sewage disposal areas as indicated on the permit issued by KCHD.
- Site modification in the area of the initial and replacement wastewater disposal systems may be required by KCHD. Site modification would typically include soil removal and backfill with approved washed sand (2NS) otherwise known as "cut-down" type sewage disposal systems.
- Designated initial and replacement sewage disposal areas shall not be located within any drainage way and must be isolated a minimum of 100 feet from any perennial surface water drains, 50 feet from any water well, 50 feet from intermittent surface water, 25 feet from foundation walls containing subsurface drains, 25 feet from storm sewer catch basins, 10 feet from solid storm sewers and open drains, 10' from unit boundaries, and outside any easement or right-of-way.

Continued

WATER SYSTEMS

- Individual water supply systems will be permitted on a unit solely to provide water for domestic consumption at the residence, for irrigation purposes, swimming pools, or other nondomestic uses on the unit.
- A permit from KCHD is required prior to the installation or major repair of any on-site water supply. As part of the application, KCHD may require a site plan of the property upon which the water supply is or will be located. Required features may include property boundaries, elevations, buildings, sewage disposal system, surface water bodies, wells, underground fuel storage tanks, chemical storage areas, driveways, and other significant details.
- All wells installed for private water supply must penetrate an adequate protective continuous clay overburden of at least ten (10) feet. This overburden is to be located greater than twenty-five (25) feet below the ground surface. A test well on Unit 3, drilled to a depth of 135 feet, found a suitable clay barrier with adequate water quality and quantity.
- All wells are to be grouted in accordance with the Michigan Department of Environmental Quality water well grouting requirements.
- Except as otherwise approved by KCHD, all wells must be located on the unit being served, horizontally isolated 50 feet from sources of contamination including any component of the septic system, septic tanks, and sewage lift vaults. All wells must be 10 feet from property boundaries, buried sewers, easements, right-of-way, and building drains.
- It will be the responsibility of the co-owner to install and maintain the water supply system in good order and working condition and comply with all applicable governmental regulations and neither the developer nor the association will have any responsibility with respect to the same.
- Due to elevated levels of hardness and iron, water treatment systems may be necessary. Discharge of said water treatment system backwash cannot be directed into the building sewer, septic tanks, or disposal areas. The owner of each unit shall make provisions for a separate drainage system to properly dispose of water treatment system backwash.

KCHD requests that this portion (well/septic language) of the document not be recorded until approved and stamped by this office. Upon receipt of the approved, recorded document (well/septic language), final Health Department approval can be granted. If you have any questions, please contact me at 616-204-2375.

Sincerely,



Jason E. Buck, REHS
Sanitarian Specialist
Environmental Health Division

cc: Steve Peterson, Cascade Charter Township Planner
Kendall Beck, P.E., Roosien and Associates

Proposed protective Covenants & Deed restrictions

WASTEWATER DISPOSAL SYSTEMS

- KCHD may require site evaluations prior to issuing septic system permits when the proposed initial and/or replacement wastewater disposal system is outside of those areas already approved and on file with KCHD
- With the application to obtain a permit from KCHD for a septic tank and disposal areas, the applicant will submit to KCHD a lot development plan drawn to scale that will locate the dwelling, drives and right-of-ways, utilities, unit boundary lines, building site and proposed septic location. As part of the application, KCHD may require a topographical map showing existing and proposed contours. Contour intervals shall not exceed two (2) feet.
- Utilities, buildings, drives, or other structures that may interfere with the installation and operation of the on-site sewage disposal system shall not be permitted within the designated initial and replacement sewage disposal areas as indicated on the permit issued by KCHD.
- Site modification in the area of the initial and replacement wastewater disposal systems may be required by KCHD. Site modification would typically include soil removal and backfill with approved washed sand (2NS) otherwise known as "cut-down" type sewage disposal systems.
- Designated initial and replacement sewage disposal areas shall not be located within any drainage way and must be isolated a minimum of 100 feet from any perennial surface water drains, 50 feet from any water well, 50 feet from intermittent surface water, 25 feet from foundation walls containing subsurface drains, 25 feet from storm sewer catch basins, 10 feet from solid storm sewers and open drains, 10' from unit boundaries, and outside any easement or right-of-way.

WATER SYSTEMS

- Individual water supply systems will be permitted on a unit solely to provide water for domestic consumption at the residence, for irrigation purposes, swimming pools, or other nondomestic uses on the unit.
- A permit from KCHD is required prior to the installation or major repair of any on-site water supply. As part of the application, KCHD may require a site plan of the property upon which the water supply is or will be located. Required features may include property boundaries, elevations, buildings, sewage disposal system, surface water bodies, wells, underground fuel storage tanks, chemical storage areas, driveways, and other significant details.
- All wells installed for private water supply must penetrate an adequate protective continuous clay overburden of at least ten (10) feet. This overburden is to be located greater than twenty-five (25) feet below the ground surface. A test well on Unit 3, drilled to a depth of 135 feet, found a suitable clay barrier with adequate water quality and quantity.
- All wells are to be grouted in accordance with the Michigan Department of Environmental Quality water well grouting requirements.
- Except as otherwise approved by KCHD, all wells must be located on the unit being served, horizontally isolated 50 feet from sources of contamination including any component of the septic system, septic tanks, and sewage lift vaults. All wells must be 10 feet from property boundaries, buried sewers, easements, right-of-way, and building drains.
- It will be the responsibility of the co-owner to install and maintain the water supply system in good order and working condition and comply with all applicable governmental regulations and neither the developer nor the association will have any responsibility with respect to the same.
- Due to elevated levels of hardness and iron, water treatment systems may be necessary. Discharge of said water treatment system backwash cannot be directed into the building sewer, septic tanks, or disposal areas. The owner of each unit shall make provisions for a separate drainage system to properly dispose of water treatment system backwash.

USE AND OCCUPANCY RESTRICTIONS; ENFORCEMENT

Section 1. Establishment of Restrictions. In order to provide for a congenial occupancy of the Development, and for the protection of the value of the properties, the use of the properties and the Development shall be subject to the following limitations:

No immoral, improper, unlawful or offensive activity shall be carried on within any properties, nor shall anything be done which may be or become an annoyance or a nuisance to the other co-owners, nor shall any unreasonably noisy activity be carried on in any properties or on the common elements. No co-owner shall do or permit anything to be done or keep or permit to be kept in his Properties or on the common elements anything that will increase the insurance rate on the Development without the written approval of the Association. Each member who is the cause thereof shall pay to the Association the increased cost of insurance premiums resulting from any such activity or the maintenance of any such condition.

Vacant Properties and yard areas within occupied Properties and yard areas between the Properties boundaries and the pavement of the roads must be neatly maintained with grass, weeds and other vegetation cut and without accumulation of natural or other debris. Grass must be mowed regularly so that the grass is never longer than 8 inches. Without written approval by the DRC (Development Review Committee), no co-owner shall change in any way the exterior appearance of the residence and other improvements and appurtenances located within his Properties or the yard area appurtenant thereto.

No co-owner shall use, or permit any occupant, agent, employee, invitee, guest or member of his family to use, any firearms or other similar dangerous weapons, projectiles or devices anywhere on or about the Development.

No signs or other advertising devices shall be displayed which are visible from the exterior of a residential dwelling or on the common elements, without written permission from the Association, except as permitted to the Developer in Subsection (kk) hereof. Provided "For Sale" signs no greater than 2 feet by 2 feet for the purpose of advertising the Properties for sale may be displayed on the Properties, but not on any common element.

No animal shall be kept except common indoor household pets. Such pets may not be kept or bred for any commercial purpose and shall have such care and restraint so as not to be obnoxious or offensive on account of noise, odor or unsanitary conditions. No animal other than domestic cats shall be permitted to run loose within the development. No savage or dangerous animal shall be kept. No rottweiler or pit bull shall be kept. No more than two such household pets may be kept in any Properties without written permission of the Board of Directors. The Association may charge all co-owners maintaining animals a reasonable additional assessment to be collected in the manner provided in these By-Laws if the Association determines such assessment necessary to defray the maintenance cost to the Association of accommodating animals within the Development. The Association may, without liability to the owner thereof, remove or cause to be removed, any animal from the Development which it determines to be in violation of the restrictions imposed by this Section. The Association shall have the right to require that any pets be registered wftl1it and may adopt such additional

who causes an animal to be brought or kept in the Development shall indemnify and hold harmless the Association for any damage, loss or liability which might accrue to the Association as a result of the presence of such animal in the Condominium, regardless of whether the animal's presence is permitted. Co-owner shall be responsible for the collection and disposition of all animal waste material deposited by any pet maintained by such co-owner.

No trucks, house trailers, commercial vehicles, camping trailers, snowmobiles, snowmobile trailers or vehicles may be parked or stored upon the premises of the Development or on any properties unless parked in the garage. Commercial vehicles and trucks shall not be parked in or about the Development (except as above provided) unless while making deliveries or pickups in the normal course of business. Campers and similar vehicles may not be kept at the Development for a period exceeding forty-eight (48) hours except with the express written approval of the Board of Directors or its designee. No inoperable vehicle of any type may be stored upon the Development either temporarily or permanently.

No exterior antenna or aerial of any kind may be erected or maintained anywhere within any Properties or the Development Premises, except dishes of one meter in diameter or smaller if screened from other properties, roads and common elements and located in the rear yard.

No easements shall be granted by any co-owner without the express written approval of the Association.

No Properties shall be subdivided unless approved by the DRC.

No structure of a temporary character, or outbuilding, including trailer, basement, tent, shack, garage or barn shall be used on any Properties at any time as a residence, either temporarily or permanently; provided that Developer may use such structure for purposes of construction or sales office.

Each co-owner shall keep his Properties insured against damage from fire, windstorm and other ordinarily insured casualties in an amount equal to the highest insurable value of the properties.

Except as may be initially installed by Developer, no spotlights, floodlights or similar type high intensity lighting shall be placed or utilized upon any Properties which in any way will allow light to be reflected on any other Properties or the improvements thereon or upon any Common Areas or any part thereof without the written authorization of the DRC. Other types of low intensity lighting which do not disturb the co-owners or other occupants of the Development shall be allowed with the approval of the DRC.

Except as provided below, no business or commercial activity shall be conducted on the Development Premises, Home businesses shall be permitted so long as all business activity is carried out inside of the dwelling and is undetectable from outside of the Properties. No more than one (1) employee that does not live in the Properties shall be employed in the Properties. No unreasonable amount of traffic shall be permitted to the home business. The DRC shall have the exclusive and conclusive right to determine the reasonableness of the amount of traffic.

No above ground swimming pools shall be constructed or maintained. All swimming pools must be located in the rear yard and screen enclosed or fenced.

All single story homes shall have a minimum of 1,900 square feet and all one and one-half story, two story, bi level and tri level homes shall have a minimum of 2,700 square feet. No single or double wide mobile homes, modular homes or any other homes or structures from off-site may be moved onto any Properties. All homes must have a basement. No driveway shall have an average grade greater than six percent (6%).

All dwellings shall have an attached garage with a minimum of two stalls and a maximum of four stalls.

Each residence must be totally complete within 12 months of commencing construction of the residence.

The exterior of each residence shall be completed with high quality materials such as stone, brick, Fiber cement, LP Smart side, stucco, vinyl or aluminum siding. The following specific requirements shall apply:

roofing: minimum of 30-year dimensional-laminated shingles;

front elevation: all windows and corners on entire house must have a minimum of 4 inch trim.

Facia and soffit must be aluminum, LP Smart Side or fiber cement, no horizontal or vertical vinyl or aluminum siding is allowed as the home is viewed from the front unless it is minimum .100 vinyl cedar shake which must not have "J" channel around it;

sides and rear: vinyl siding is permitted, so long as it is a minimum of

add black as a color below

(cc) Fences shall be allowed in the rear yard only under the following specifications:

Height: Minimum 36" maximum 48"

Picket width: Minimum 1" maximum 4"

Picket spacing between pickets: Minimum 3" maximum 4"

Permissible colors: White, Tan, Khaki or Terratone.

Permissible materials: Vinyl, PVC or Aluminum.

Except as specified above, no fence shall be permitted with out DRC approval, including approval of location, height, type, style, materials and color. No wooden fences shall be permitted. No non-coated wire fences shall be permitted.

.044 vinyl vertical or horizontal siding or minimum .100 vinyl cedar shake;
trim: must be LP Smart Side, fiber cement or plastic composite; no wood trim is permitted

Each residence shall have a mailbox of type, style and color specified by the
DRC.

(cc) Any additions shall comply in all respects with these regulations.

(

(ee) Accessory buildings will be permitted, up to the maximum sq ft as spelled out in Cascade Twp ordinance.

(gg) No tank for the storage of fuel oil, bottled gas, gasoline or other fuel may be maintained on any properties. Each residence must connect to the natural gas line in the project.

GD No more than one garage sale, or similar type of sale, may be conducted for each Properties in each calendar year and that only on the dates approved in advance by the Association. No such sale may continue for more than forty-eight (48) hours.



NOTICE OF AUTHORIZATION

Permit Number: WRP013439 v. 1
Site Name: 41-8585 52nd-Ada; Freedom Reins Farms

Date Issued: September 14, 2018
Expiration Date: September 14, 2023

The Michigan Department of Environmental Quality, Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

- Part 31, Floodplain Regulatory Authority of the Water Resources Protection.
- Part 301, Inland Lakes and Streams.
- Part 303, Wetlands Protection.
- Part 315, Dam Safety.
- Part 323, Shorelands Protection and Management.
- Part 325, Great Lakes Submerged Lands.
- Part 353, Sand Dunes Protection and Management.

Authorized activity:

Excavate approximately 305.1 cubic yards within 0.09 acres of wetland and place approximately 131.7 cubic yards of fill within 0.03 acres of wetland. Install 80 linear feet of 51-inch by 31-inch concrete arch pipe with two 96-inch by 78-inch concrete flared end sections within an unnamed creek to construct a private road for a new residential development. Total wetland impact proposed is 0.09 acres.

All construction work shall be completed in accordance with the attached plans and specifications of this permit.

To be conducted at property located in: Kent County, Waterbody: Unnamed Stream/Wetland Section 26, Town 06N, Range 10W, Cascade Township

Permittee:
Doug Lee, Freedom Reins Farm, LLC.
8613 52nd St. SE
Ada, MI 49301

Luis Saldivia
Grand Rapids District Office
Water Resources Division
616-710-2136

*This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.*
Please refer to the above permit number with any questions or concerns.



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER RESOURCES DIVISION
PERMIT

Issued To:

Doug Lee, Freedom Reins Farm, LLC.
8613 52nd St. SE
Ada, MI 49301

Permit No: WRP013439 v.1
Submission No.: HN6-GZWN-MKE41
Site Name: 41-8585 52nd-Ada; Freedom Reins Farms
Issued: September 14, 2018
Revised:
Expires: September 14, 2023

This permit is being issued by the Michigan Department of Environmental Quality (MDEQ), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- Part 301, Inland Lakes and Streams
- Part 303, Wetlands Protection
- Part 315, Dam Safety
- Part 31, Water Resources Protection (Floodplain Regulatory Authority)
- Part 323, Shorelands Protection and Management
- Part 325, Great Lakes Submerged Lands
- Part 353, Sand Dunes Protection and Management

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

Excavate approximately 305.1 cubic yards within 0.09 acres of wetland and place approximately 131.7 cubic yards of fill within 0.03 acres of wetland. Install 80 linear feet of 51-inch by 31-inch concrete arch pipe with two 96-inch by 78-inch concrete flared end sections within an unnamed creek to construct a private road for a new residential development. Total wetland impact proposed is 0.09 acres.

All construction work shall be completed in accordance with the attached plans and specifications of this permit.

Waterbody Affected: Unnamed stream/wetland
Property Location: Kent County, Cascade Township, Town/Range/Section 06N10W26

Authority granted by this permit is subject to the following limitations:

- A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.
- B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
- C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.

- D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
- E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
- F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
- G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
- H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
- I. Permittee shall notify the MDEQ within one week after the completion of the activity authorized by this permit by completing and forwarding the attached preaddressed postcard to the office addressed thereon.
- J. This permit shall not be assigned or transferred without the written approval of the MDEQ.
- K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
- L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).
- M. In issuing this permit, the MDEQ has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, the MDEQ may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.
- N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.
- O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, the MDEQ may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.
- P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from the MDEQ. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by the MDEQ prior to being implemented.
- Q. This permit may be transferred to another person upon written approval of the MDEQ. The permittee must submit a written request to the MDEQ to transfer the permit to the new owner. The new owner must also submit a written request to the MDEQ to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all of the above information may be provided to the MDEQ. The MDEQ will review the request and, if approved, will provide written notification to the new owner.
- R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.
- S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.
- T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

- U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.
- V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.
- W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.
- X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.
- Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:
 1. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit www.mi.gov/deqstormwater and select "Soil Erosion and Sedimentation Control Program" under "Related Links."
 2. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.
 3. No fill, excess soil, or other material shall be placed in any wetland, floodplain, or surface water area not specifically authorized by this permit, its plans, and specifications.
 4. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
 5. The permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.
 6. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by the MDEQ, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
 7. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20th for the Upper Peninsula, October 1st for the Lower Peninsula north of US-10, and October 10th for the Lower Peninsula south of US-10.
 8. A storm water discharge permit may be required under the Federal Clean Water Act for construction activities that disturb one or more acres of land and discharge to surface waters. For sites over five (5) acres, the permit coverage may be obtained by a Part 91, Soil Erosion and Sedimentation Control (SESC) permit, or coverage as an Authorized Public Agency (APA), and filing a "Notice of Coverage" form to the MDEQ's Water Resource Division. For sites with disturbance from one acre up to five acres, storm water coverage is automatic once the SESC permit is obtained or if work is being conducted by an APA. These one to five acre sites are not required to apply for coverage, but are required to comply with storm water discharge permit requirements. Information on the storm water discharge permit is available from the Water Resource Division's Storm Water Permit Program at www.michigan.gov/soilerosion under the "Construction Storm Water Info".
 9. All fill/backfill shall consist of clean inert material that will not cause siltation nor contain soluble chemicals, organic matter, pollutants, or contaminants. All fill shall be contained in such a manner so as not to erode into any surface water, floodplain, or wetland. All raw areas associated with the permitted activity shall be stabilized with sod and/or seed and mulch, riprap, or other technically effective methods as necessary to prevent erosion.
 10. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain or non-bottomland), prepared for

stabilization, and stabilized with sod and/or seed and mulch in such a manner to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.

11. The placement of the new culvert and the initial placement of fill in the stream shall be done in the dry or in such a manner that all flow is immediately passed through the culvert. The major placement of fill shall be done in the dry or in still water where erosion and siltation will be minimized. The fill material used in this initial placement shall be washed gravel, coarse aggregate, or rock and shall be placed at both ends of the culvert above normal water level before backfill material is placed.
12. The culvert shall be installed to align with the center line of the existing stream at both the inlet and outlet ends, and must be buried below the stream bed to provide a natural channel substrate through the structure as shown on the approved plans.
13. Road fill side slopes shall not be steeper than 1-on-2 (1 vertical to 2 horizontal) except where headwalls of reinforced concrete, mortar masonry, dry masonry, or other acceptable methods are used.
14. Road fill side slopes terminating in the stream and any raw streambanks resulting from the construction shall be stabilized with temporary measures in accordance with appropriate Best Management Practices based on site conditions, and if necessary, may be riprapped extending above the ordinary high water mark, before or upon commencement of the permitted activity. Temporary stabilization measures shall be maintained until permanent measures are in place.
15. All other road fill slopes, ditches, and other raw areas draining directly to the stream may be protected with riprap, sod and/or seed and mulch as may be necessary to provide effective erosion protection. The placement of riprap shall be limited to the minimum necessary to ensure proper stabilization of the side slopes and fill in the immediate vicinity of the structure.
16. If the project, or any portion of the project, is stopped and lies incomplete for any length of time (other than that encountered in a normal work week) every precaution shall be taken to protect the incomplete work from erosion, including the placement of temporary gravel bag riprap, temporary seed and mulch, or other acceptable temporary protection.
17. No work shall be done in the stream during periods of above-normal flows except as necessary to prevent erosion.
18. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.
19. Prior to the initiation of any permitted construction activity, a sedimentation barrier shall be installed along the entire route of the disturbed wetland area and maintained in good working order until permanent stabilization and re-vegetation of all disturbed areas has occurred. The sedimentation barrier shall be removed after re-vegetation.
20. Construction must be undertaken and completed during the dry period of the wetland, or when frozen. If the area does not dry out or freeze, construction shall be done on equipment mats to prevent compaction of the soil. Upon completion of the project, the disturbed wetland areas shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion.
21. This permit is limited to authorizing the construction as specified above and carries with it no assurances or implications that associated wetland or floodplain areas can be developed and serviced by the structures authorized by this permit.
22. No fill, excess soil, or other material shall be placed in any wetland or surface water area not specifically authorized by this permit, its plans, and specifications.

Issued By: _____



Luis Saldivia
Grand Rapids District Office
Water Resources Division
616-710-2136

cc: Cascade Township Clerk
Kent County Drain Commissioner
Kent County SESC



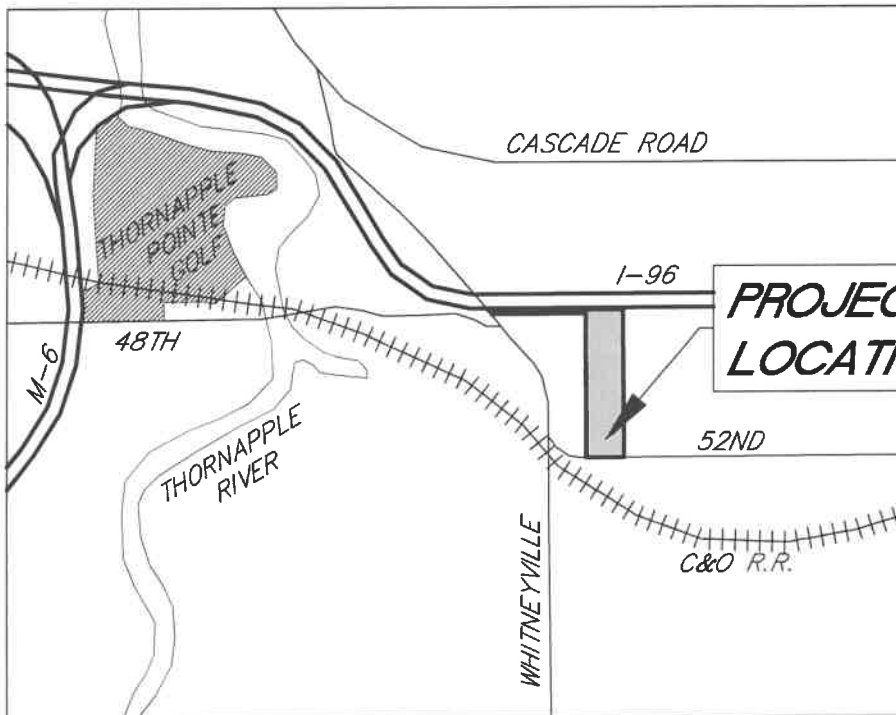
**King & MacGregor
Environmental, Inc.**

2520 Woodmeadow Drive SE
Grand Rapids, Michigan 49546
Phone: (616) 957-1231
Fax: (616) 957-2198

KME File No.:

**WETLAND BOUNDARIES FLAGGED BY
KING & MACGREGOR ENVIRONMENTAL, INC.
JULY, 2018**

Please be advised the information provided by KME, Inc. regarding wetland boundaries is an estimate of the wetland boundary. The ultimate decision on wetland boundary locations and jurisdiction thereof rests with the DEQ and, in some cases, the Federal government. As a result, there may be adjustments to boundaries based upon review of a regulatory agency. An agency determination can vary, depending on various factors including, but not limited to, experience of the agency representative making the determination and the season of the year. In addition, the physical characteristics of the site can change with time, depending on the weather, vegetation patterns, drainage and management activities on adjacent parcels or other events. Any of these factors can change the nature/extent of wetlands on the site. There is no assurance given herein or otherwise implied that the KME, Inc. wetland boundary will be accepted by any regulatory agency. This wetland determination, as defined by the boundary flags depicted on this drawing, is valid for one growing season (one year) from the date flagged. Be aware the manufacturer of the G.P.S. (Global Positioning System) used by KME, Inc. has advised that the equipment has, at best, sub-meter accuracy under optimal conditions. The location of the actual wetland boundaries will therefore vary somewhat if a traditional survey method, such as total station, of the wetland flags is conducted.



**PROJECT
LOCATION**



VICINITY MAP
NOT TO SCALE

171386-MDEQ-01.DWG

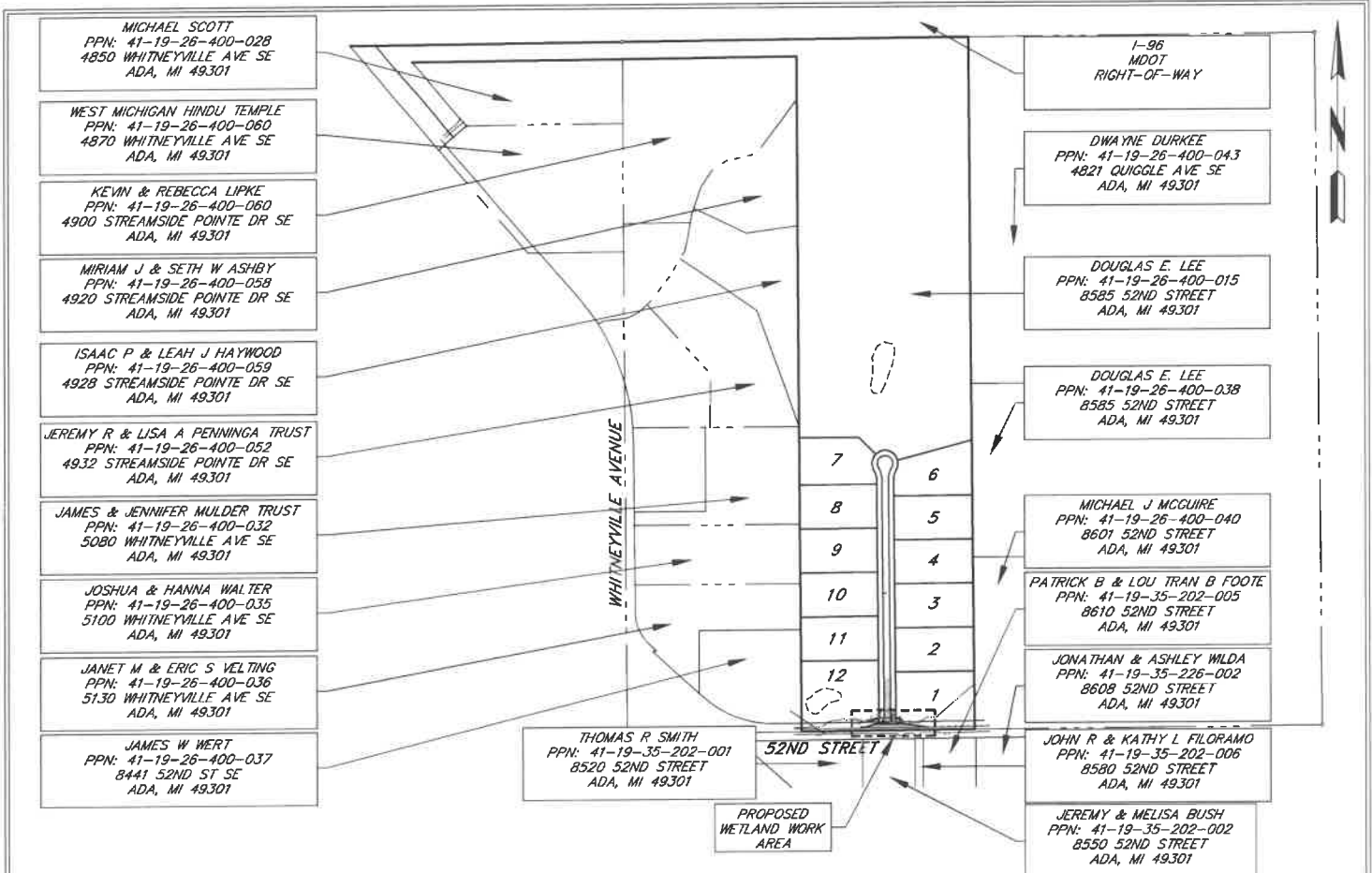
Roosien & Associates
SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
GRAND RAPIDS, MI 49525
TELE: (616) 361-7220
FAX: (616) 361-1822

**WETLAND WORK
IN
S26, T6N, R10W, CASCADE TWP.
KENT COUNTY, MICHIGAN**

PREPARED FOR:
FREEDOM REINS FARMS, LLC
ATTN: DOUG LEE
8613 52ND ST SE
ADA, MI 49301

SHEET 1 of 9
DATE:
07-25-18



MICHAEL SCOTT
PPN: 41-19-26-400-028
4850 WHITNEYVILLE AVE SE
ADA, MI 49301

WEST MICHIGAN HINDU TEMPLE
PPN: 41-19-26-400-060
4870 WHITNEYVILLE AVE SE
ADA, MI 49301

KEVIN & REBECCA LIPKE
PPN: 41-19-26-400-060
4900 STREAMSIDE POINTE DR SE
ADA, MI 49301

MIRIAM J & SETH W ASHBY
PPN: 41-19-26-400-058
4920 STREAMSIDE POINTE DR SE
ADA, MI 49301

ISAAC P & LEAH J HAYWOOD
PPN: 41-19-26-400-059
4928 STREAMSIDE POINTE DR SE
ADA, MI 49301

JEREMY R & LISA A PENNINGA TRUST
PPN: 41-19-26-400-052
4932 STREAMSIDE POINTE DR SE
ADA, MI 49301

JAMES & JENNIFER MULDER TRUST
PPN: 41-19-26-400-032
5080 WHITNEYVILLE AVE SE
ADA, MI 49301

JOSHUA & HANNA WALTER
PPN: 41-19-26-400-035
5100 WHITNEYVILLE AVE SE
ADA, MI 49301

JANET M & ERIC S VELTING
PPN: 41-19-26-400-036
5130 WHITNEYVILLE AVE SE
ADA, MI 49301

JAMES W WERT
PPN: 41-19-26-400-037
8441 52ND ST SE
ADA, MI 49301

THOMAS R SMITH
PPN: 41-19-35-202-001
8520 52ND STREET
ADA, MI 49301

PROPOSED
WETLAND WORK
AREA

1-96
MDOJ
RIGHT-OF-WAY

DWAYNE DURKEE
PPN: 41-19-26-400-043
4821 QUIGGLE AVE SE
ADA, MI 49301

DOUGLAS E. LEE
PPN: 41-19-26-400-015
8585 52ND STREET
ADA, MI 49301

DOUGLAS E. LEE
PPN: 41-19-26-400-038
8585 52ND STREET
ADA, MI 49301

MICHAEL J MCGUIRE
PPN: 41-19-26-400-040
8601 52ND STREET
ADA, MI 49301

PATRICK B & LOU TRAN B FOOTE
PPN: 41-19-35-202-005
8610 52ND STREET
ADA, MI 49301

JONATHAN & ASHLEY WILDA
PPN: 41-19-35-226-002
8608 52ND STREET
ADA, MI 49301

JOHN R & KATHY L FILORAMO
PPN: 41-19-35-202-006
8580 52ND STREET
ADA, MI 49301

JEREMY & MELISA BUSH
PPN: 41-19-35-202-002
8550 52ND STREET
ADA, MI 49301

ADJACENT PROPERTY OWNERS

SCALE: 1" = 6,000'

171386-MDEQ-02.DWG

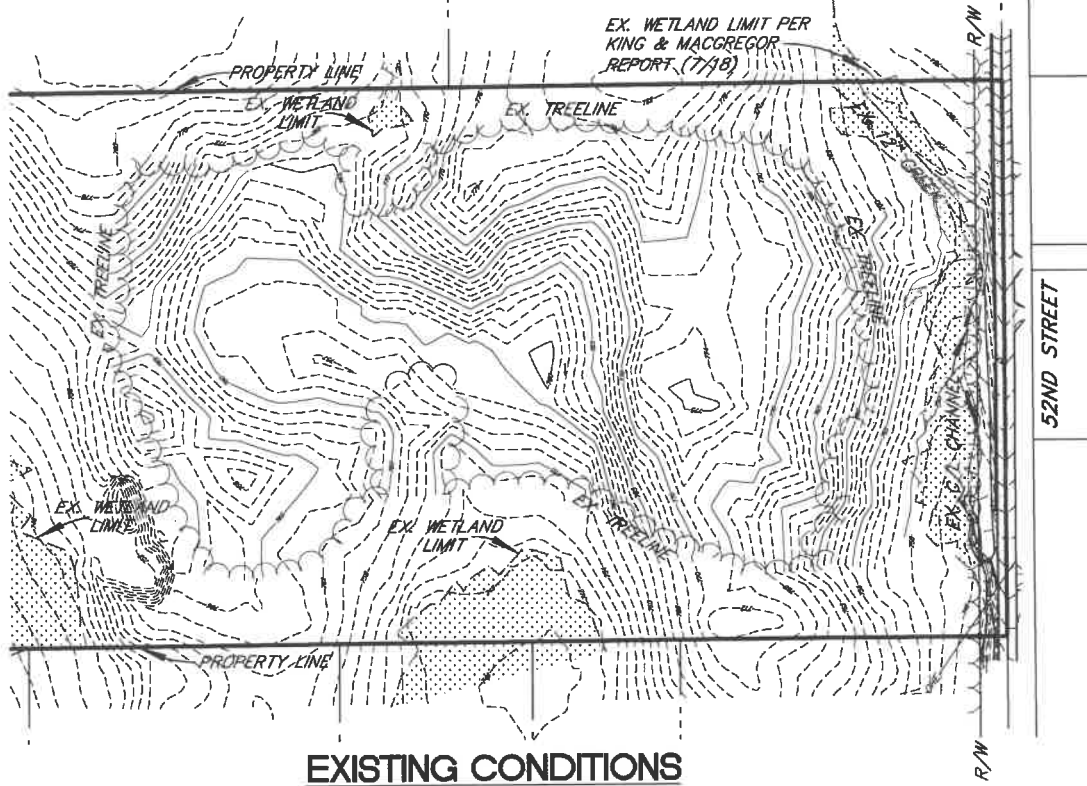
Roosien & Associates
SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
GRAND RAPIDS, MI 49525
TELE. (616) 361-7220
FAX (616) 361-1822

WETLAND WORK
IN
S26, T6N, R10W, CASCADE TWP.
KENT COUNTY, MICHIGAN

PREPARED FOR:
FREEDOM REINS FARMS, LLC
ATTN: DOUG LEE
8613 52ND ST SE
ADA, MI 49301

SHEET 2 of 9
DATE:
07-25-18



EXISTING CONDITIONS

SCALE: 1" = 2,000'



171386-MDEQ-03.DWG

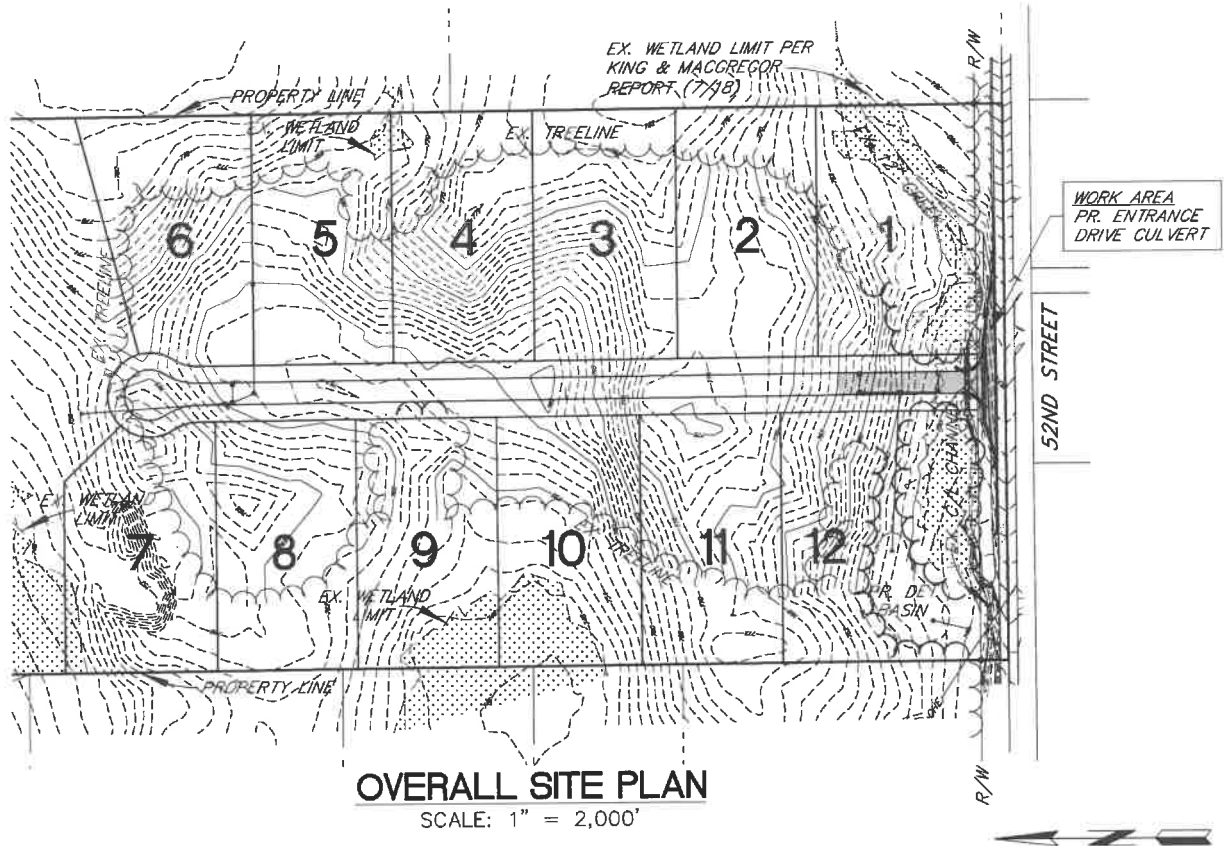
R
 Roosien & Associates
 SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE NE
 GRAND RAPIDS, MI 49525
 TELE. (616) 361-7220
 FAX (616) 361-1822

**WETLAND WORK
 IN
 S26, T6N, R10W, CASCADE TWP.
 KENT COUNTY, MICHIGAN**

PREPARED FOR:
 FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8613 52ND ST SE
 ADA, MI 49301

SHEET 3 of 9
 DATE:
 07-25-18



OVERALL SITE PLAN
SCALE: 1" = 2,000'

171386-MDEQ-04.DWG

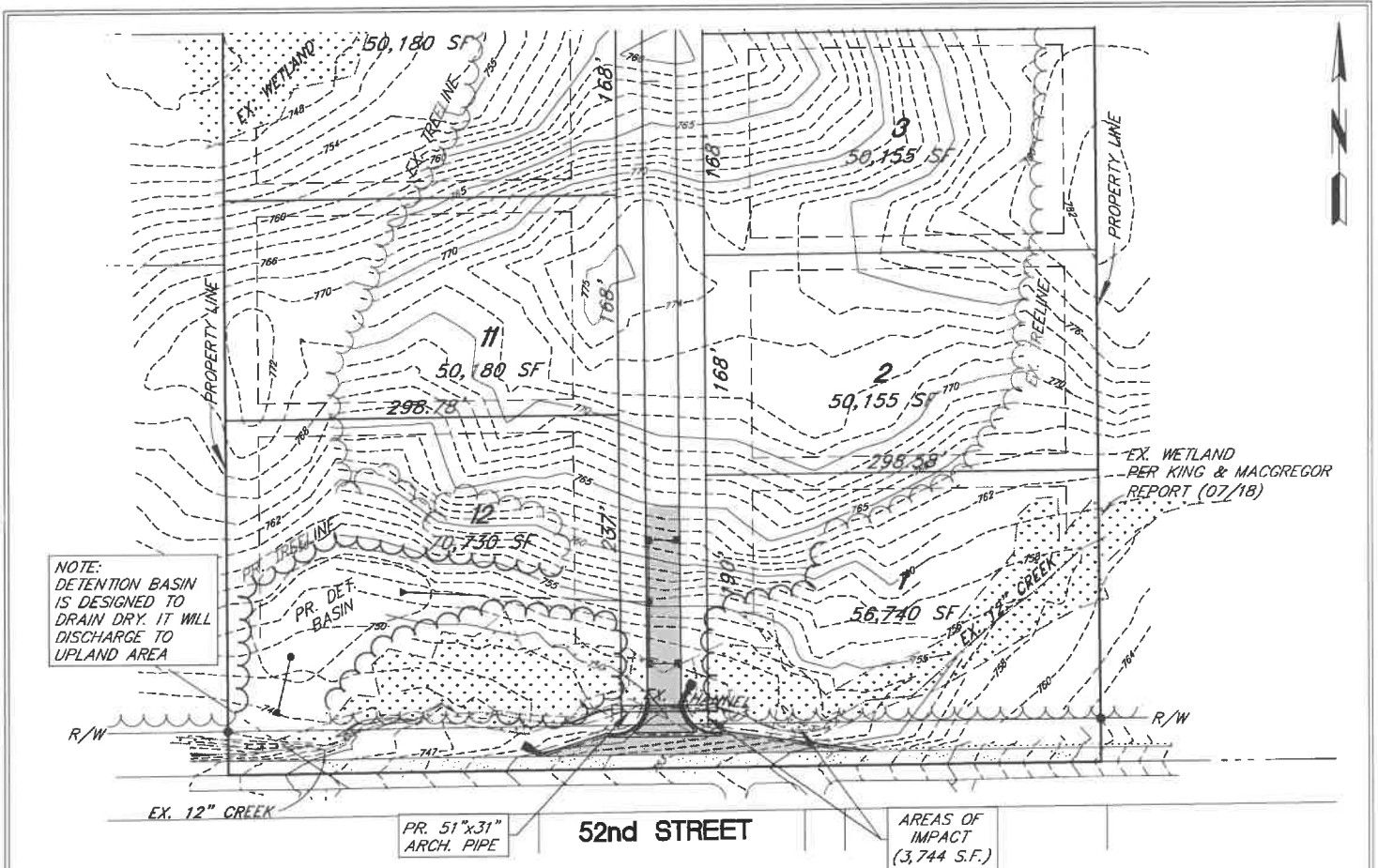
R
Roosien & Associates
SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
GRAND RAPIDS, MI 49525
TELE. (616) 361-7220
FAX (616) 361-1822

WETLAND WORK
IN
S26, T6N, R10W, CASCADE TWP.
KENT COUNTY, MICHIGAN

PREPARED FOR:
FREEDOM REINS FARMS, LLC
ATTN: DOUG LEE
8613 52ND ST SE
ADA, MI 49301


SHEET 4 of 9
DATE:
07-25-18

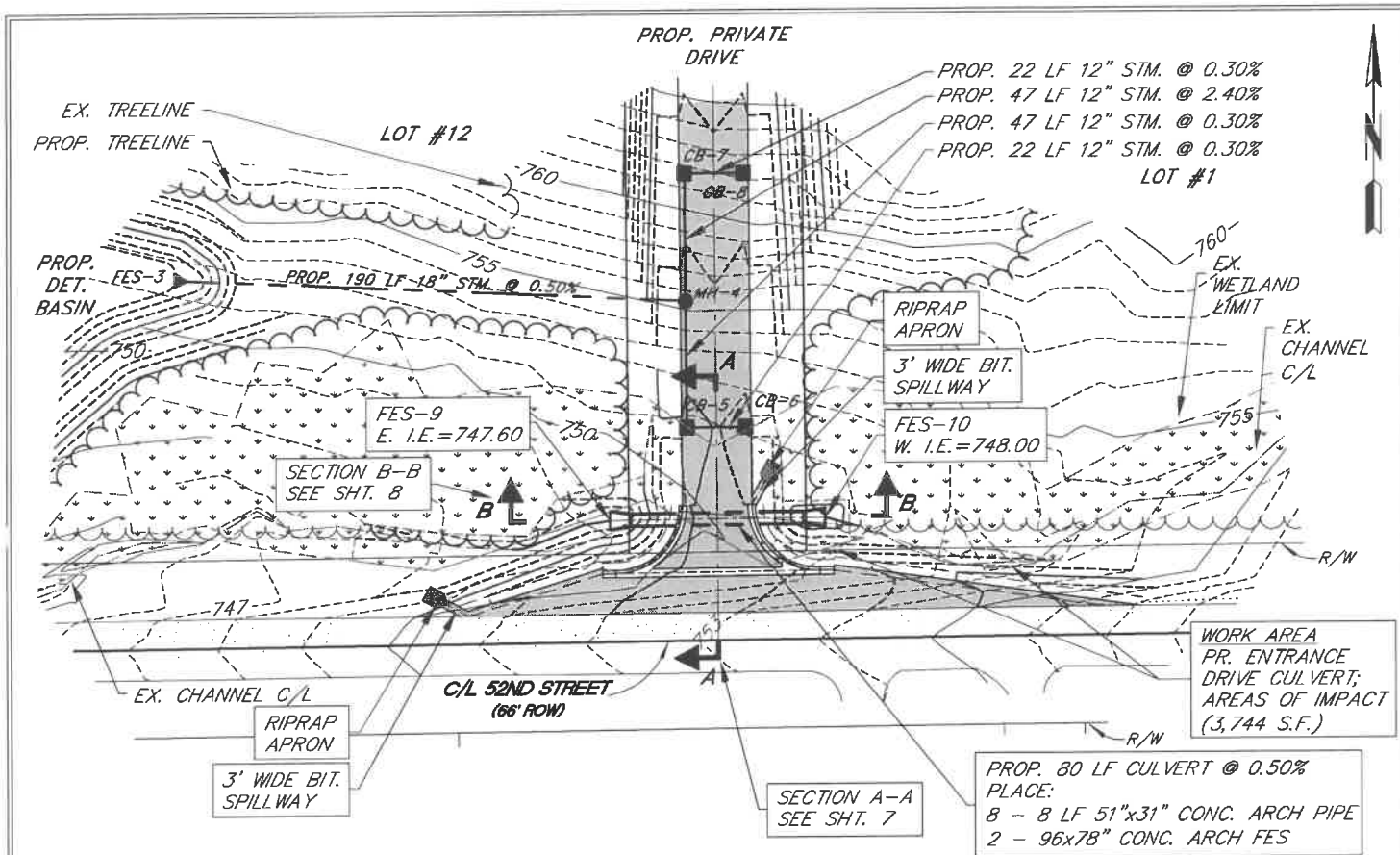


PROPOSED DRIVE ENTRY

SCALE: 1" = 100'

171386-MDEQ-05.DWG

 <p>Roosien & Associates SURVEYING AND ENGINEERING</p>	<p>5055 PLAINFIELD AVE. NE GRAND RAPIDS, MI 49525 TELE (616) 361-7220 FAX (616) 361-1822</p>	<p>WETLAND FILL AND EXCAVATION IN S26, T6N, R10W, CASCADE TWP. KENT COUNTY, MICHIGAN</p>	<p>PREPARED FOR: FREEDOM REINS FARMS, LLC ATTN: DOUG LEE 8613 52ND ST SE ADA, MI 49301</p>	<p>SHEET 5 of 9 DATE: 07-25-18</p>
--	--	--	--	--



PROPOSED CULVERT CROSSING

SCALE: 1" = 50'

171386-MDEQ-06.DWG

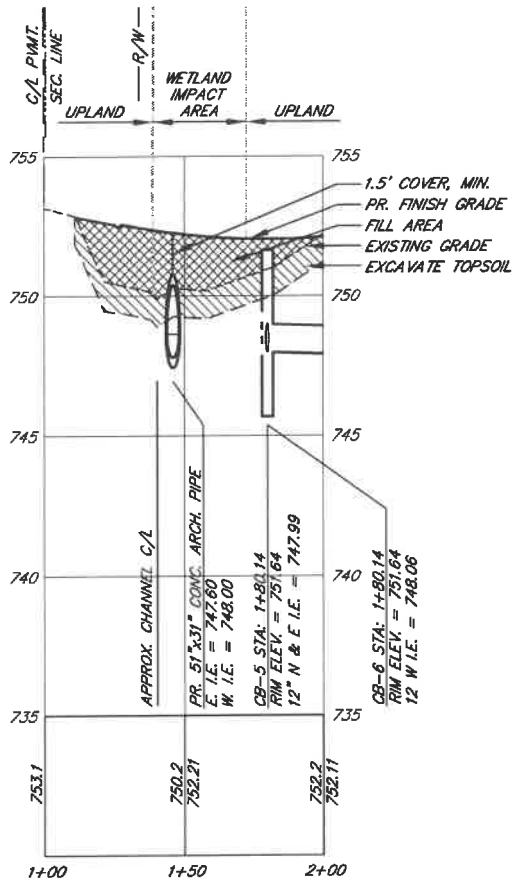

Roosien & Associates
 SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
 GRAND RAPIDS, MI 49525
 TELE. (616) 361-7220
 FAX (616) 361-1822

WETLAND WORK
 IN
 S26, T6N, R10W, CASCADE TWP.
 KENT COUNTY, MICHIGAN

PREPARED FOR:
 FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8613 52ND ST SE
 ADA, MI 49301

SHEET 6 of 9
 DATE:
 07-25-18



SECTION A-A

SCALE: HOR. 1"=50' VERT. 1"=5'

171386-MDEQ-07.DWG

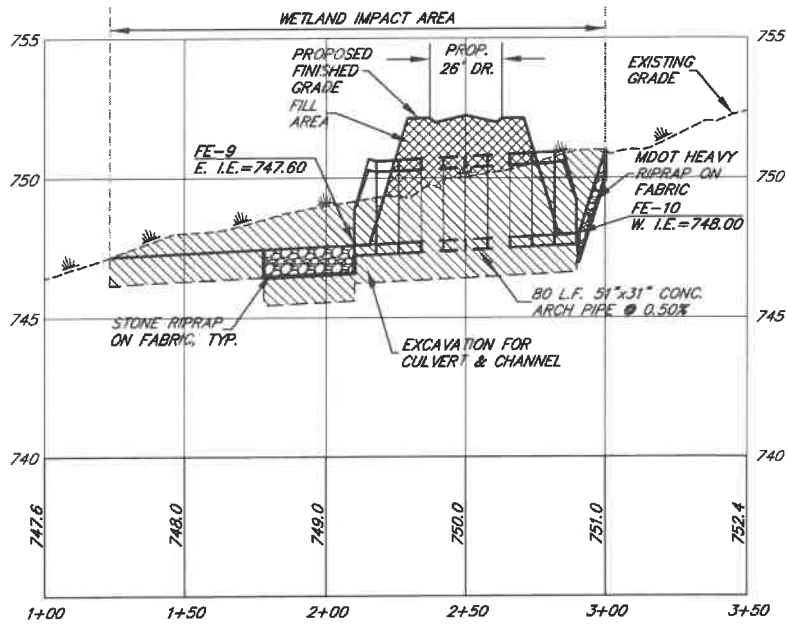

 Roosien & Associates
 SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
 GRAND RAPIDS, MI 49525
 TELE. (616) 361-7220
 FAX (616) 361-1822

**WETLAND WORK
 IN
 S26, T6N, R10W, CASCADE TWP.
 KENT COUNTY, MICHIGAN**

PREPARED FOR:
 FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8613 52ND ST SE
 ADA, MI 49301

SHEET 7 of 9
 DATE:
 07-25-18



IMPACT AREA
WETLAND EXCAVATION
 AVG. WIDTH = 16'
 AVG. LENGTH = 234'
 AREA = 3,744 S.F.
 AVG. DEPTH = 2.2'
 VOLUME = 305.1 C.Y.

WETLAND FILL
 AVG. WIDTH = 38'
 AVG. LENGTH = 39'
 AREA = 1,482 S.F.
 AVG. DEPTH = 2.4'
 VOLUME = 131.7 C.Y.

SECTION B-B

SCALE: HOR. 1"=50' VERT. 1"=5'

171386-MDEQ-08.DWG

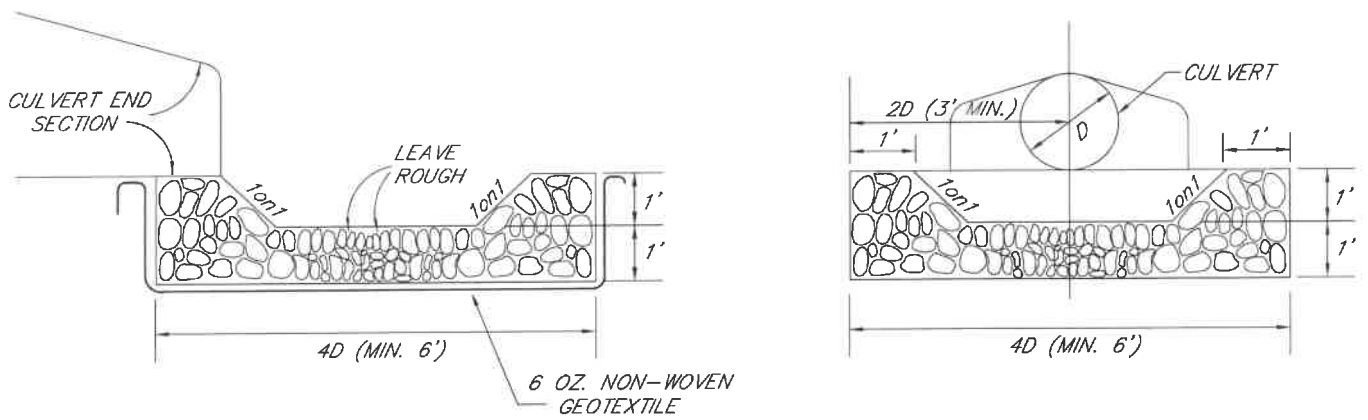
R
 Roosien & Associates
 SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
 GRAND RAPIDS, MI 49525
 TELE. (616) 361-7220
 FAX (616) 361-1822

WETLAND WORK
 IN
S26, T6N, R10W, CASCADE TWP.
KENT COUNTY, MICHIGAN

PREPARED FOR:
 FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8613 52ND ST SE
 ADA, MI 49301

SHEET 8 of 9
 DATE:
 07-25-18



RIPRAP APRON

NOT TO SCALE

171386-MDEQ-09.DWG

R
 Roosien & Associates
 SURVEYING AND ENGINEERING

5055 PLAINFIELD AVE. NE
 GRAND RAPIDS, MI 49525
 TELE. (616) 361-7220
 FAX (616) 361-1822

WETLAND WORK
 IN
 S26, T6N, R10W, CASCADE TWP.
 KENT COUNTY, MICHIGAN

PREPARED FOR:
 FREEDOM REINS FARMS, LLC
 ATTN: DOUG LEE
 8613 52ND ST SE
 ADA, MI 49301

SHEET 9 of 9
 DATE:
 07-25-18

**Freedom Reins Farms LLC – Site Condos
Cascade Charter Township, Kent County, MI (Section 26, T6N, R10W)
Stormwater Management Design Summary
R&A Project #171386**

General Site Information:

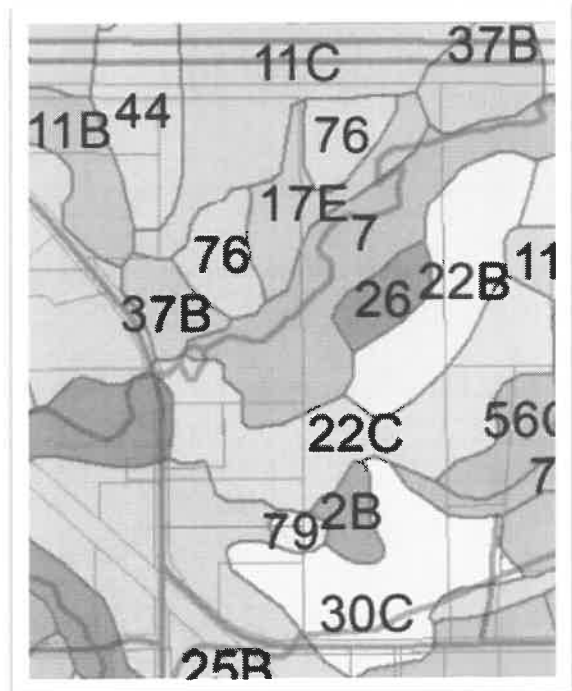
The site is located on the north side of 52nd Street, east of Whitneyville Road. A residential condo (12-units) is proposed and will be served by a private road. Individual units will be served by private well and septic (as approved by the Kent County Health Department).

Other characteristics of the site include:

- Discharges into the Thorneapple River.
- Part of the Cascade Southwest drainage district.
- Culverts have been identified by GIS within the Township's Master Plan. Neither culvert is identified for recommended improvements.

Per the Cascade Charter Township Stormwater Master Plan, the site has the following characteristics:

- Has 'forested' and 'emergent' wetlands on the northern half of the property.
- Has a variety of soils types (see graphic).
- Hydrologic Soil Type A (south half);
Hydrologic Soil Type B (middle).
 - o Others exist on the site but are not affected by proposed development.
- The property is not listed within a 'problem area' in the district evaluation.
- Is listed within Zone A under the proposed stormwater management zones.



Per the Cascade Township Stormwater Ordinance, Zone A requires:

- a. Utilize retention ponds (above or below grade) and infiltration to the greatest extent possible as allowed by the local soil conditions.
- b. Design shall be in accordance with the Kent County Drain Commissioner's Development Drainage Rules for Retention Ponds with the following modifications:
 - a. A minimum of two soil borings extending a minimum of 10 feet below each proposed basin bottom with sieve/permeability analysis of the soil in the 10 feet immediately below each proposed basin bottom.
 - b. Basins shall be designed to store runoff from a single 100 year storm event
- c. If soil condition do not permit infiltration, storm water facilities will satisfy one of the following:
 - a. Provide a permanent on-site storm water system with a restricted outlet sufficient to provide on-site detention of storm water runoff in a twenty-five (25) year storm event, and a direct connection (overland or underground) for all storm water runoff that will be discharged from and through the development site in a one hundred (100) year storm event; or
 - b. Provide a permanent on-site storm water system with a restricted outlet designed to provide on-site detention or on-site retention of storm water runoff in a one hundred (100) year storm event.

The soils on this site are predominately heavy. As such, the design focuses on detention ponds that handle 100-year storm events. Storm sewers will be used to collect the storm runoff in the proposed street and front

yards. Drainage swales will be used in the rear yards to collect and safely convey runoff from the site's rolling terrain and proposed rear yards.

The entire site is 43.94 acres. The area contributing to the detention ponds is approximately 10.59 acres. The proposed disturbed area is 9.67 acres.

Stormwater Management Design:

A. Detention Pond:

- The proposed C-factor for the contributing areas to the detention ponds is 0.29.
- According to KCDC Table 5, the required storage volume for this C-factor is 2,408 cft / acre (100-year event).
 - Detention Pond #1 = 12,105 cft
 - Detention Pond #2 = 13,404 cft
- Water quality control will be met by storing the first 0.5 inches of rainfall.
 - Detention Pond #1 = 9,124 cft
 - Detention Pond #2 = 10,103 cft
- According to the KCDC Table 5, the required bank erosion control volume for a 2-year event (C = 0.29) is 594 cft / acre and the release rate is limited to dissipating this volume over 24-hours.
 - Detention Pond #1 = 2,986 cft and 0.105 cfs (24.05 hrs)
 - Detention Pond #2 = 3,306 cft and 0.105 cfs (24.05 hrs)

Detention Pond #1 has a required volume of 21,228 cft. The design proposes 23,036 cft of storage.

Detention Pond #2 has a required volume of 23,506 cft. The design proposed 26,009 cft of storage.

B. Release Rate:

The release rate from the pond is limited to 0.13 cfs / acre.

- Detention Pond #1 = x cft
- Detention Pond #2 = x cft

The detention pond water level / release rate is being controlled between three sets of openings at levels for water quality control, bank erosion control and detention release.

A spillway is provided for each pond to safely by-pass a 10 year storm.

Enclosures:

1. Overall Site C-Factor Computations
2. Tributary Map
3. Proposed Pond Volume Sizing Calculations (including KCDC Table #5)
4. Proposed Pond Overflow Structure Calculations
5. Onsite Storm Structure Table & Hydraulics
6. Kent County Soils Report (partial)
7. National Wetlands Mapper
8. Relevant portions of the Township's Stormwater Master Plan & Asset Management Study
9. Preliminary Site Plans

C-FACTOR COMPUTATIONS

Project Name Freedom Reins - Cascade Township
Project Number 171386
Date September 12, 2018

Location

Detention Basin #1

Surface	Area (sft)	C-factor	Wt. C-factor
Building	10,800	0.9	9720
Pavement	13,000	0.9	11700
Driveways	5,400	0.9	4860
Sidewalks	-	0.9	0
Grass	189,769	0.2	37954
TOTAL	218,969		0.29

Location	Detention Basin #1
Area (acres)	5.0268
C-factor	0.29

Location

Detention Basin #2

Surface	Area (sft)	C-factor	Wt. C-factor
Building	10,800	0.9	9720
Pavement	14,300	0.9	12870
Driveways	5,400	0.9	4860
Sidewalks	-	0.9	0
Grass	211,966	0.2	42393
TOTAL	242,466		0.29

Location	Detention Basin #2
Area (acres)	5.5663
C-factor	0.29

**TABLE 5⁽¹⁾
STORAGE VOLUME PER ACRE**

RUNOFF COEFFICIENT "C"	100 YR	50 YR	25 YR	10 YR	2 YR
1000 CUBIC FEET ⁽²⁾					
0.05	0.18	0.14	0.10	0.06	0.01
0.10	0.59	0.47	0.36	0.23	0.11
0.15	1.09	0.87	0.66	0.47	0.24
0.20	1.63	1.32	1.04	0.72	0.40
0.25	2.28	1.82	1.41	1.02	0.56
0.30	2.92	2.37	1.85	1.31	0.73
0.35	3.56	2.92	2.31	1.63	0.93
0.40	4.27	3.47	2.78	2.00	1.13
0.45	4.98	4.06	3.24	2.37	1.33
0.50	5.69	4.66	3.73	2.74	1.53
0.55	6.40	5.27	4.24	3.10	1.78
0.60	7.15	5.88	4.75	3.47	2.02
0.65	7.98	6.48	5.27	3.86	2.27
0.70	8.81	7.15	5.78	4.27	2.52
0.75	9.64	7.86	6.29	4.67	2.76
0.80	10.47	8.57	6.81	5.08	3.01
0.85	11.30	9.28	7.41	5.48	3.26
0.90	12.13	9.99	8.01	5.89	3.52
0.95	12.96	10.70	8.61	6.29	3.79
1.00	13.79	11.41	9.22	6.70	4.07

NOTES

- (1) TABLE TO BE USED FOR WATERSHED AREAS SMALLER THAN 40 ACRES.
- (2) EACH UNIT IN THE STORAGE TABLE REPRESENTS 1000 CUBIC FEET.
- (3) STORAGE TABLE ALREADY TAKES INTO ACCOUNT 0.13 CFS/ACRE RELEASE RATE, THEREFORE THE TABLE SHALL NOT BE USED TO CALCULATE THE REQUIRED VOLUME FOR ANY INFILTRATION SYSTEMS OR BASINS UTILIZING A RELEASE RATE THAT IS NOT 0.13 CFS/ACRE
- (4) IN A SITUATION WHERE THE DETENTION FACILITY OUTFALL WILL BE SUBMERGED, REDUCING THE RELEASE RATE, THIS TABLE SHALL NOT BE USED.

100-year event: Interpolation for 0.29:

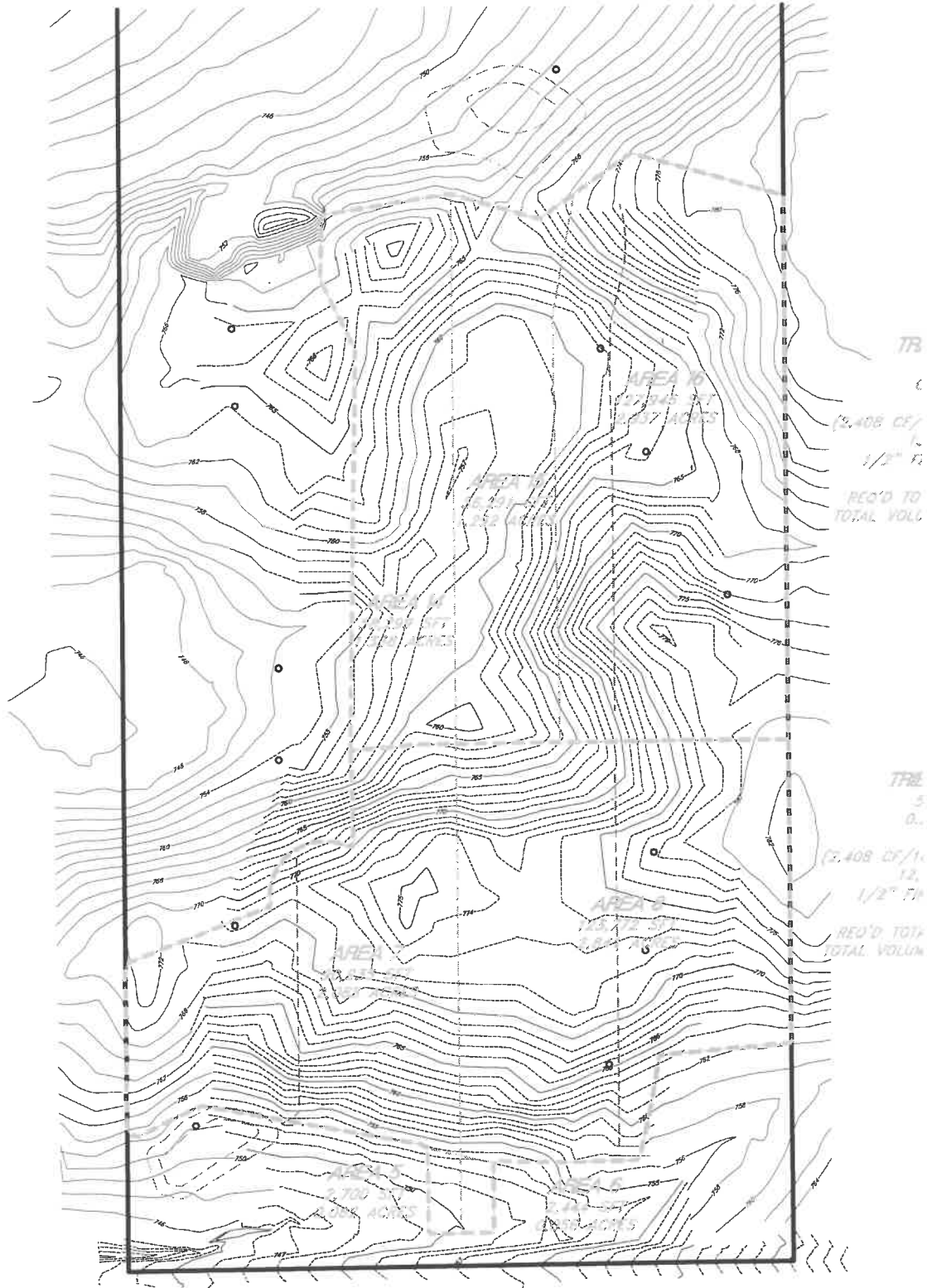
$$(2.92 - 2.28) / 5 = 0.128$$

$$2.28 + 0.128 = 2,408 \text{ cf / ac}$$

2-year event: Interpolation for 0.29:

$$(0.73 - 0.56) / 5 = 0.034$$

$$0.56 + 0.034 = 594 \text{ cf / ac}$$



Pond Volume Calculation

Project Name Freedom Reins - Cascade Charter Township
Project Number 171386
Date September 12, 2018

Detention Basin #1

Elevation	Surface Area (sft)	Storage Provided (cft)	Total Storage Provided (cft)	WSE
746.00	4		-	Bottom of pond
747.00	3,430	1,717	1,717	
748.00	4,434	3,932	5,649	Water Quality Control
748.80	5,131	3,826	9,475	2-year storm volume
749.00	5,311	1,044	10,519	
750.00	6,244	5,778	16,297	
751.00	7,235	6,740	23,036	Detention volume
752.00	8,281	7,758	30,794	Top of berm

KCDC Volume Req'd (100 yr): 12,105 cft
 Water Quality Control (first 1/2") 9,124 cft
Required Volume: 21,228 cft
Proposed Volume: 23,036 cft (at elev. 751)
 1,808 cft additional storage

2-year storm event Volume: 2,986 cft

Detention Basin #2

Elevation	Surface Area (sft)	Storage Provided (cft)	Total Storage Provided (cft)	WSE
755.00	4		-	Bottom of pond
756.00	3,141	1,573	1,573	
757.00	6,985	5,063	6,636	Water Quality Control
758.00	8,398	7,692	14,327	2-year storm volume
759.00	9,911	9,155	23,482	
759.25	10,305	2,527	26,009	Detention volume
760.00	11,525	8,186	34,195	
760.25	11,943	2,934	37,128	Top of berm

KCDC Volume Req'd (100 yr): 13,404 cft
 Water Quality Control (first 1/2") 10,103 cft
Required Volume: 23,506 cft
Proposed Volume: 26,009 cft (at elev. 759.25)
 2,502 cft additional storage

2-year storm event Volume: 3,306 cft

Detention Pond #1: Overflow Structure Calculations

Project Name Freedom Reins - Cascade Charter Township
Project Number 171386
Date September 12, 2018

Pond Elevations:

10-year spillway **752.00** top
 751.00 bottom
 Prop. Storage Volume: **750.00**
 Bank Erosion: **748.80**
 First Flush: **748.00**
 Prop. Bottom: **746.00**

Required Flows:

Flood Control (FC): **0.65** cfs
 Water Quality (WQ): 0.105 cfs
 Bank Erosion (BE): 0.251 cfs
 FC - (WQ + BE) **0.30**

Proposed Orifice Flows:

	<u>Water Quality:</u>	<u>Bank Erosion:</u>	<u>Flood Control:</u>
Cd =	0.6	0.6	0.6
Pipe Dia. (inches) =	1.70	1.80	2.75
Pipe Dia. (feet) =	0.142	0.150	0.229
Area (sft) =	0.0158	0.0177	0.0412
H (ft) =	1.93	2.73	3.89
g (ft / s^2) =	32.2	32.2	32.2
Q (cfs) =	0.105	0.140	0.39
		<i>0.246</i>	<i>0.64 Total cfs out</i>
Time to Drain (hrs) =	24.05 (24-hr min.)		

Proposed Spillway:

<u>Q (design):</u>	0.61	<u>Q (proposed):</u>	C = 3.0
c =	3.50 (Tc = 17 mins)		Width (at base; ft) = 3.00
l10 (in / hr) =	5.03		Width (at top; ft) = 7.00 (assumes 1/4 sides)
Area (ac) =	10.73 cfs		H (ft) = 1.00
Q (design) =			Q (cfs) = 14.40

Detention Pond #2: Overflow Structure Calculations

Project Name Freedom Reins - Cascade Charter Township
Project Number 171386
Date September 12, 2018

Pond Elevations:

10-year spillway	760.25 top
	759.25 bottom
Prop. Storage Volume:	759.25
Bank Erosion:	758.00
First Flush:	757.00
Prop. Bottom:	755.00

Required Flows:

Flood Control (FC):	0.72 cfs
Water Quality (WQ):	0.105 cfs
Bank Erosion (BE):	0.246 cfs
FC - (WQ + BE)	0.37

Proposed Orifice Flows:

	<u>Water Quality:</u>	<u>Bank Erosion:</u>	<u>Flood Control:</u>
Cd =	0.6	0.6	0.6
Pipe Dia. (inches) =	1.70	1.75	3.00
Pipe Dia. (feet) =	0.142	0.146	0.250
Area (sft) =	0.0158	0.0167	0.0491
H (ft) =	1.93	2.93	4.13
g (ft / s ²) =	32.2	32.2	32.2
Q (cfs) =	0.105	0.138	0.48
		0.243	0.72 <i>Total cfs out</i>
Time to Drain (hrs) =	24.05 (24-hr min.)		

Proposed Spillway:

Q (design):

c =	0.61
110 (in / hr) =	3.50 (Tc = 17 mins)
Area (ac) =	5.57
Q (design) =	11.88 cfs

Q (proposed):

C =	3.0
Width (at base; ft) =	3.00
Width (at top; ft) =	7.00 (assumes 1/4 sides)
H (ft) =	1.00
Q (cfs) =	14.40

Project: Freedom Reins - Site Condo	Project #: 171386	Page: 1 OF 1	Design Assumptions:	Roosien & Associates
Subject: Storm Sewer Design	By: KAB	Checked:	Manning's Equation: $n = 0.013$ Concrete	5055 Plainfield Ave., NE
Date: September 12, 2018			Rational Method For Runoff Calculations	Grand Rapids, MI 49525
			10-year Design Storm - Bulletin 71	Ph (616) 361 - 7220 Fax (616) 361 - 1822

Notes:	Structure ID		Length (ft)	Area (INPUT @ 2) (ACRES)	C For Input @ 2 Total	C x A	SUM OF C x A	Time of Conc. (min)	Intensity (in/hr)	Design Flow (cfs)	Pipe Diameter (in)	Minimum Pipe Slope (%)	Actual Pipe Slope (%)	Capacity of Sewer (cfs)	Full Flow Velocity (fps)	Travel Time (min)	Sewer Invert Elevation		Rim Elevation		
	From	To															Upper End	Lower End	Upper End	Lower End	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
CB	8	7	24	2.84	0.90	2.56	2.56	15.00	3.81	9.75	12	7.49%	0.60%	2.76	3.51	0.11	749.12	748.98	753.33	753.33	
CB	7	4	47	2.09	0.90	1.88	4.44	15.11	3.80	16.85	12	22.37%	2.40%	5.52	7.03	0.11	748.98	747.85	753.33	752.06	
CB	6	5	24	0.06	0.90	0.05	0.05	15.00	3.81	0.19	12	0.00%	0.30%	1.95	2.48	0.16	748.06	747.99	751.54	751.54	
CB	5	4	47	0.06	0.90	0.06	0.11	15.16	3.79	0.40	12	0.01%	0.30%	1.95	2.48	0.32	747.99	747.85	751.54	752.06	
MH	4	3	190	0.00	0.90	0.00	4.54	15.48	3.76	17.06	18	2.64%	0.50%	7.43	4.20	0.75	747.85	746.90	752.06	746.90	
OS	2	1	46	5.03	0.29	1.46	5.03	16.23	3.67	18.45	18	3.09%	0.50%	7.43	4.20	0.18					

Run-Off Coefficients

Pavement c = 0.9

Lawn c = 0.2

Structure Number	Tributary Area (Acres)	Imperveous Area (Acres)	Rim Elevation (Feet)	Run-Off Coeff.	C X A
1	0.00		745.50		
2	5.03			0.29	1.46
3	0.00		746.90		
4	0.00		752.06	0.90	
5	0.06		751.64	0.90	0.06
6	0.06		751.64	0.90	0.05
7	2.09		753.33	0.90	1.88
8	2.84		753.33	0.90	2.56

Project: Freedom Reins - Site Condo	Project #: 171386	Page: 1 OF 1	Design Assumptions:	Roosien & Associates 5055 Plainfield Ave., NE Grand Rapids, MI 49525 Ph (616) 361 - 7220 Fax (616) 361 - 1822
Subject: Storm Sewer Design	By: KAB	Checked:	Manning's Equation: n= 0.013 Concrete	
Date: September 12, 2018			Rational Method For Runoff Calculations 10-year Design Storm - Bulletin 71	

Notes:	Structure ID		Length (ft)	Area (INPUT @ 2) (ACRES)	C For Input @ 2 Total	C x A	SUM OF C x A	Time of Conc. (min)	Intensity (in/hr)	Design Flow (cfs)	Pipe Diameter (in)	Minimum Pipe Slope (%)	Actual Pipe Slope (%)	Capacity of Sewer (cfs)	Full Flow Velocity (fps)	Travel Time (min)	Sewer Invert Elevation		Rim Elevation	
	From	To															Upper End	Lower End	Upper End	Lower End
	CB	17	16	156	2.94	0.20	0.59	0.59	15.00	3.81	2.24	12	0.40%	1.25%	3.98	5.07	0.51	762.00	760.05	762.00
JB	16	14	28	0.00	0.00	0.00	0.59	15.51	3.75	2.21	12	0.38%	0.50%	2.52	3.21	0.15	760.05	759.91	763.55	763.06
CB	15	14	24	1.29	0.90	1.16	1.16	15.00	3.81	4.43	12	1.54%	1.00%	3.56	4.54	0.09	759.56	759.32	763.06	763.06
CB	14	13	209	1.34	0.90	1.21	2.37	15.60	3.74	8.86	18	0.71%	1.10%	11.02	6.23	0.56	759.32	757.02	763.06	757.00
OS	12	11	52	5.57	0.30	1.67	5.57	16.16	3.68	20.49	18	3.81%	0.50%	7.43	4.20	0.21				

Run-Off Coefficients

Pavement c = 0.9

Lawn c = 0.2

Structure Number	Tributary Area (Acres)	Imperveous Area (Acres)	Rim Elevation (Feet)	Run-Off Coeff.	C X A
11	0.00		754.00		
12	5.57			0.30	1.67
13	0.00		757.00		
14	1.34		763.06	0.90	1.21
15	1.29		763.06	0.90	1.16
16	0.00		763.55	0.00	
17	2.94		762.00	0.20	0.59



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Kent County, Michigan



July 20, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Kent County, Michigan.....	14
2B—Oakville fine sand, moderately wet, 0 to 4 percent slopes.....	14
7—Cohoctah loam.....	15
11C—Owosso-Marlette sandy loams, 6 to 12 percent slopes.....	16
15—Sloan loam.....	18
17E—Chelsea loamy fine sand, 18 to 45 percent slopes.....	19
22B—Oshtemo sandy loam, 0 to 6 percent slopes.....	21
22C—Oshtemo sandy loam, 6 to 12 percent slopes.....	22
25B—Oakville fine sand, 0 to 6 percent slopes.....	24
26—Adrian muck, 0 to 1 percent slopes.....	25
30C—Spinks loamy sand, 6 to 12 percent slopes.....	27
37B—Capac loam, 0 to 4 percent slopes.....	29
48C—Metea loamy sand, 6 to 12 percent slopes.....	31
56C—Scalley sandy loam, 6 to 12 percent slopes.....	32
76—Udipsammets, nearly level to steep.....	33
79—Houghton muck, ponded, 0 to 1 percent slopes.....	34
References	37

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

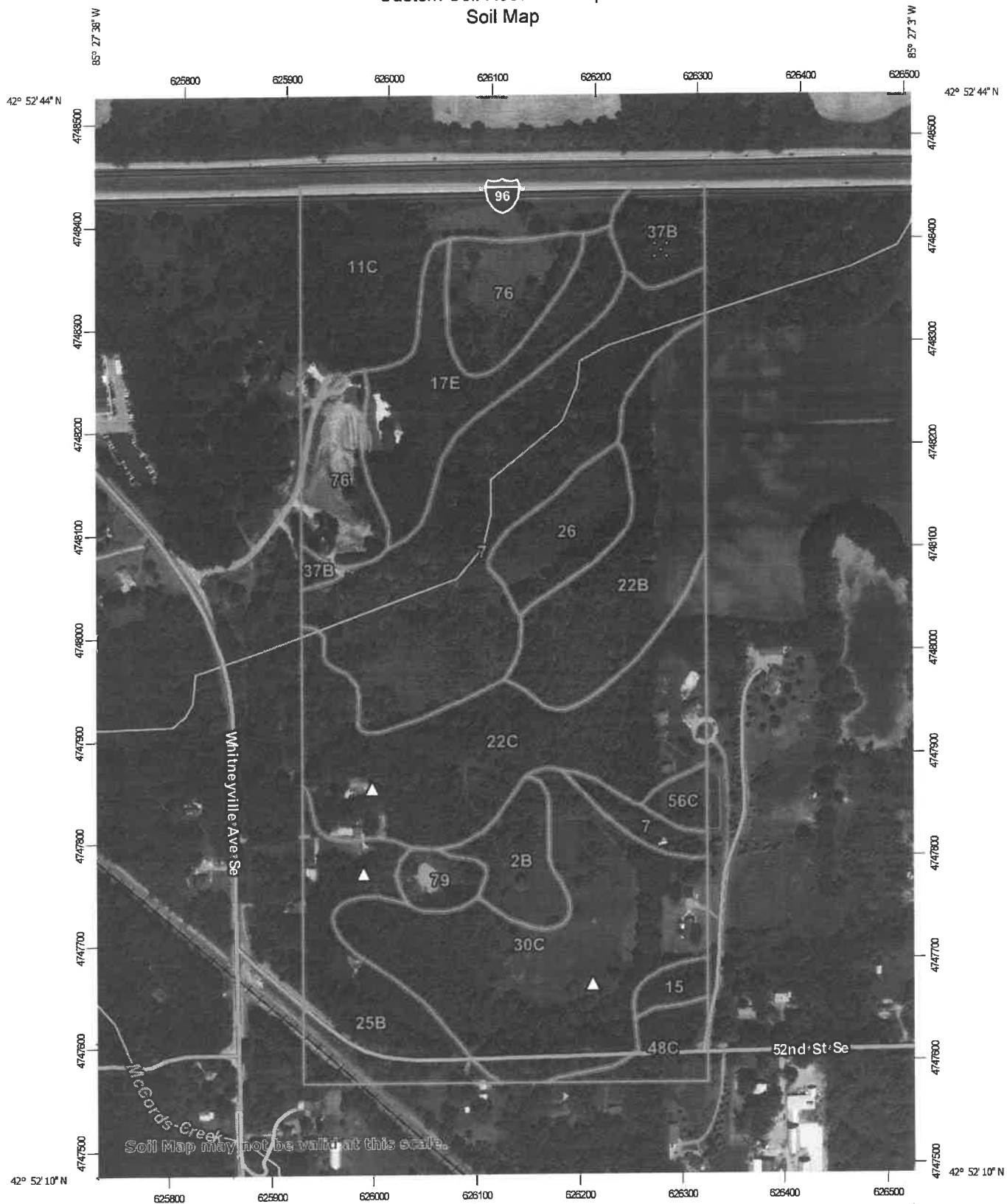
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:5,120 if printed on A portrait (8.5" x 11") sheet.





































0 50 100 200 300 Meters

0 200 400 800 1200 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)		 Spoil Area	
	Area of Interest (AOI)	 Stony Spot	
Soils		 Very Stony Spot	
	Soil Map Unit Polygons	 Wet Spot	
	Soil Map Unit Lines	 Other	
	Soil Map Unit Points	 Special Line Features	
Special Point Features		Water Features	
	Blowout	 Streams and Canals	
	Borrow Pit	Transportation	
	Clay Spot	 Rails	
	Closed Depression	 Interstate Highways	
	Gravel Pit	 US Routes	
	Gravelly Spot	 Major Roads	
	Landfill	 Local Roads	
	Lava Flow	Background	
	Marsh or swamp	 Aerial Photography	
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kent County, Michigan
 Survey Area Data: Version 16, Oct 5, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 4, 2011—Mar 10, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Custom Soil Resource Report

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2B	Oakville fine sand, moderately wet, 0 to 4 percent slopes	2.2	2.6%
7	Cohoctah loam	15.0	17.5%
11C	Owosso-Marlette sandy loams, 6 to 12 percent slopes	7.8	9.1%
15	Sloan loam	0.7	0.8%
17E	Chelsea loamy fine sand, 18 to 45 percent slopes	6.0	7.0%
22B	Oshtemo sandy loam, 0 to 6 percent slopes	8.1	9.5%
22C	Oshtemo sandy loam, 6 to 12 percent slopes	12.3	14.4%
25B	Oakville fine sand, 0 to 6 percent slopes	6.0	7.1%
26	Adrian muck, 0 to 1 percent slopes	2.9	3.3%
30C	Spinks loamy sand, 6 to 12 percent slopes	13.0	15.2%
37B	Capac loam, 0 to 4 percent slopes	2.2	2.6%
48C	Metea loamy sand, 6 to 12 percent slopes	1.5	1.8%
56C	Scalley sandy loam, 6 to 12 percent slopes	0.7	0.8%
76	Udipsammments, nearly level to steep	6.0	7.0%
79	Houghton muck, ponded, 0 to 1 percent slopes	1.0	1.2%
Totals for Area of Interest		85.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class.

Custom Soil Resource Report

Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

Custom Soil Resource Report

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Kent County, Michigan

2B—Oakville fine sand, moderately wet, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: 68qd
Elevation: 600 to 1,200 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Oakville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oakville

Setting

Landform: Outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash

Typical profile

H1 - 0 to 6 inches: fine sand
H2 - 6 to 40 inches: fine sand
H3 - 40 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Thetford

Percent of map unit: 5 percent
Landform: Flats on outwash plains
Hydric soil rating: No

Custom Soil Resource Report

Selfridge

Percent of map unit: 5 percent
Landform: Flats on till plains, flats on moraines
Hydric soil rating: No

7—Cohoctah loam

Map Unit Setting

National map unit symbol: 68sl
Elevation: 340 to 1,000 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohoctah and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohoctah

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 31 inches: sandy loam
H3 - 31 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Custom Soil Resource Report

Hydric soil rating: Yes

Minor Components

Landes

Percent of map unit: 2 percent

Landform: Flood plains

Hydric soil rating: No

Alganssee

Percent of map unit: 2 percent

Landform: Flood plains

Hydric soil rating: No

Ceresco

Percent of map unit: 2 percent

Landform: Flood plains

Hydric soil rating: No

Shoals

Percent of map unit: 2 percent

Landform: Flood plains

Hydric soil rating: No

Abscota

Percent of map unit: 2 percent

Landform: Flood plains

Hydric soil rating: No

11C—Owosso-Marlette sandy loams, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 68pd

Elevation: 600 to 1,200 feet

Mean annual precipitation: 30 to 36 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 140 to 150 days

Farmland classification: Farmland of unique importance

Map Unit Composition

Owosso and similar soils: 55 percent

Marlette and similar soils: 40 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Owosso

Setting

Landform: Till plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Custom Soil Resource Report

Across-slope shape: Linear

Parent material: Loamy glaciofluvial deposits over loamy till

Typical profile

H1 - 0 to 10 inches: sandy loam

H2 - 10 to 22 inches: sandy loam

H3 - 22 to 60 inches: clay loam

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 10 percent

Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Marlette

Setting

Landform: End moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Loamy till

Typical profile

H1 - 0 to 9 inches: sandy loam

H2 - 9 to 19 inches: loam, clay loam

H2 - 9 to 19 inches: clay loam

H3 - 19 to 40 inches: loam

H4 - 40 to 60 inches:

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 30 percent

Available water storage in profile: High (about 11.7 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Metea

Percent of map unit: 2 percent

Landform: Hills on till plains, hills on moraines

Hydric soil rating: No

Spinks

Percent of map unit: 1 percent

Landform: Hills on terraces, hills on moraines, hills on till plains, hills on outwash plains

Hydric soil rating: No

Oshtemo

Percent of map unit: 1 percent

Landform: Hills on moraines, hills on outwash plains

Hydric soil rating: No

Metamora

Percent of map unit: 1 percent

Landform: Drainageways on moraines, drainageways on till plains

Hydric soil rating: No

15—Sloan loam

Map Unit Setting

National map unit symbol: 68pk

Elevation: 340 to 1,000 feet

Mean annual precipitation: 30 to 36 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 140 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Sloan and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sloan

Setting

Landform: Flood plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 40 inches: silty clay loam
H3 - 40 to 60 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Ceresco

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: No

Alganssee

Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: No

Abscota

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

Landes

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

17E—Chelsea loamy fine sand, 18 to 45 percent slopes

Map Unit Setting

National map unit symbol: 68pq

Custom Soil Resource Report

Elevation: 600 to 1,500 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Chelsea and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chelsea

Setting

Landform: Flats, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Sandy eolian sands

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 to 60 inches: fine sand, loamy fine sand
H2 - 9 to 60 inches:

Properties and qualities

Slope: 18 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Marlette

Percent of map unit: 10 percent
Landform: Escarpments on moraines
Landform position (two-dimensional): Backslope
Hydric soil rating: No

22B—Oshtemo sandy loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2v2cd
Elevation: 710 to 1,010 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Oshtemo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oshtemo

Setting

Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve, side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy drift over calcareous sandy and gravelly drift

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 13 inches: sandy loam
Bt - 13 to 36 inches: sandy loam
E and Bt - 36 to 55 inches: loamy sand
2C - 55 to 80 inches: gravelly sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 34 percent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Custom Soil Resource Report

Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Spinks

Percent of map unit: 3 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve, side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Brady

Percent of map unit: 3 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bronson

Percent of map unit: 3 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Gilford

Percent of map unit: 1 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

22C—Oshtemo sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2v2cf
Elevation: 740 to 1,030 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 200 days

Custom Soil Resource Report

Farmland classification: Farmland of unique importance

Map Unit Composition

Oshtemo and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oshtemo

Setting

Landform: Outwash plains, outwash terraces, moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, head slope, nose slope

Down-slope shape: Linear, convex

Across-slope shape: Linear

Parent material: Loamy drift over calcareous sandy and gravelly drift

Typical profile

Ap - 0 to 8 inches: sandy loam

E - 8 to 13 inches: sandy loam

Bt - 13 to 36 inches: sandy loam

E and Bt - 36 to 55 inches: loamy sand

2C - 55 to 80 inches: gravelly sand

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 34 percent

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 1.0

Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Brady

Percent of map unit: 3 percent

Landform: Outwash plains, outwash terraces, moraines

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Custom Soil Resource Report

Spinks

Percent of map unit: 3 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Bronson

Percent of map unit: 3 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Gilford

Percent of map unit: 1 percent
Landform: Outwash plains, outwash terraces, moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

25B—Oakville fine sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 68q1
Elevation: 600 to 1,200 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Oakville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oakville

Setting

Landform: Outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash

Custom Soil Resource Report

Typical profile

H1 - 0 to 6 inches: fine sand
H2 - 6 to 40 inches: fine sand
H3 - 40 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Metea

Percent of map unit: 5 percent
Landform: Knolls on till plains, knolls on moraines
Hydric soil rating: No

Tedrow

Percent of map unit: 5 percent
Landform: Flats on till plains, flats on glacial drainage channels
Hydric soil rating: No

26—Adrian muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2rfgz
Elevation: 630 to 1,110 feet
Mean annual precipitation: 31 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 125 to 205 days
Farmland classification: Farmland of local importance

Map Unit Composition

Adrian and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Custom Soil Resource Report

Description of Adrian

Setting

Landform: Depressions on outwash plains, depressions on moraines on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy glaciofluvial deposits

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 34 inches: muck
Cg - 34 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline (0.3 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 0.2
Available water storage in profile: Very high (about 15.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: Mucky Depressions (F098XA006MI), Mucky Depression (F097XA030MI), Snowy Mucky Depression (F096XA014MI), Mucky Depression (F096XB027MI)
Hydric soil rating: Yes

Minor Components

Kingsville

Percent of map unit: 3 percent
Landform: Outwash plains, nearshore zones (relict)
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Houghton

Percent of map unit: 2 percent
Landform: Depressions on outwash plains, depressions on moraines on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip

Custom Soil Resource Report

Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: Mucky Depressions (F098XA006MI), Mucky Depression (F097XA030MI), Snowy Mucky Depression (F096XA014MI), Mucky Depression (F096XB027MI)
Hydric soil rating: Yes

Edwards

Percent of map unit: 2 percent
Landform: Depressions on moraines on outwash plains, depressions on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: Yes

Gilford, gravelly subsoil

Percent of map unit: 1 percent
Landform: Glacial drainage channels, glacial drainage channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

30C—Spinks loamy sand, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2tpkq
Elevation: 700 to 1,070 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Spinks and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Spinks

Setting

Landform: Outwash plains, glacial drainage channels, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy drift

Custom Soil Resource Report

Typical profile

Ap - 0 to 9 inches: loamy sand
Bw - 9 to 28 inches: sand
E and Bt - 28 to 69 inches: loamy sand
C - 69 to 80 inches: sand

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline (0.0 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Oshtemo

Percent of map unit: 4 percent
Landform: Outwash plains, glacial drainage channels, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Thetford

Percent of map unit: 3 percent
Landform: Outwash plains, glacial drainage channels, moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: No

Metea

Percent of map unit: 2 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Custom Soil Resource Report

Filer

Percent of map unit: 1 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, head slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

37B—Capac loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2w63q
Elevation: 630 to 990 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Capac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capac

Setting

Landform: Moraines, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy till

Typical profile

Ap - 0 to 9 inches: loam
B/E - 9 to 16 inches: clay loam
Bt - 16 to 31 inches: clay loam
C - 31 to 80 inches: loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None

Custom Soil Resource Report

Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline (0.1 to 0.4 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Parkhill, non dense till subsoil

Percent of map unit: 4 percent
Landform: Moraines, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear
Hydric soil rating: Yes

Selfridge

Percent of map unit: 3 percent
Landform: Moraines, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Marlette

Percent of map unit: 2 percent
Landform: Moraines, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, head slope, nose slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Filer

Percent of map unit: 1 percent
Landform: Moraines, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, head slope, nose slope, interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

48C—Metea loamy sand, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 68rb
Elevation: 600 to 1,500 feet
Mean annual precipitation: 30 to 36 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 140 to 150 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Metea and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Metea

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Rise
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and/or loamy till

Typical profile

H1 - 0 to 9 inches: loamy sand
H2 - 9 to 29 inches: sand
H3 - 29 to 35 inches: clay loam
H4 - 35 to 60 inches: loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Custom Soil Resource Report

Minor Components

Chelsea

Percent of map unit: 4 percent

Landform: Hills on till plains, hills on terraces, hills on outwash plains, hills on moraines

Hydric soil rating: No

Marlette

Percent of map unit: 4 percent

Landform: Hills on moraines, hills on till plains

Hydric soil rating: No

Selfridge

Percent of map unit: 2 percent

Landform: Flats on till plains, flats on moraines

Hydric soil rating: No

56C—Scalley sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 68rs

Elevation: 600 to 1,200 feet

Mean annual precipitation: 30 to 36 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 140 to 150 days

Farmland classification: Farmland of unique importance

Map Unit Composition

Scalley and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scalley

Setting

Landform: Moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Loamy till over sandy drift

Typical profile

H1 - 0 to 8 inches: sandy loam

H2 - 8 to 25 inches: sandy loam

H3 - 25 to 38 inches: clay loam

H4 - 38 to 60 inches: fine sand, loamy fine sand

H4 - 38 to 60 inches:

Custom Soil Resource Report

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Spinks

Percent of map unit: 5 percent

Landform: Hills on moraines, hills on till plains, hills on outwash plains, hills on terraces

Hydric soil rating: No

Matherton

Percent of map unit: 5 percent

Landform: Drainageways on outwash plains, drainageways on valley trains, drainageways on terraces

Hydric soil rating: No

76—Udipsamments, nearly level to steep

Map Unit Setting

National map unit symbol: 68sq

Elevation: 600 to 1,000 feet

Mean annual precipitation: 30 to 36 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 140 to 150 days

Farmland classification: Not prime farmland

Map Unit Composition

Udipsamments and similar soils: 92 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udipsamments

Setting

Landform: Outwash plains

Custom Soil Resource Report

Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear, convex
Parent material: Sandy drift

Typical profile

H1 - 0 to 60 inches: sand

Properties and qualities

Slope: 0 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

79—Houghton muck, ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2w64p
Elevation: 730 to 1,100 feet
Mean annual precipitation: 30 to 41 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Houghton, ponded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houghton, Ponded

Setting

Landform: Depressions on moraines, flood plains, outwash plains, lake plains, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Herbaceous organic material

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 35 inches: muck
Oa3 - 35 to 80 inches: muck

Properties and qualities

Slope: 0 to 1 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.14 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 0.6
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Cohoctah, ponded

Percent of map unit: 7 percent
Landform: Depressions on flood plains, outwash plains, lake plains, moraines, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Palms, ponded

Percent of map unit: 1 percent
Landform: Depressions on moraines, flood plains, outwash plains, lake plains, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Edwards, ponded

Percent of map unit: 1 percent
Landform: Depressions on moraines, flood plains, outwash plains, lake plains, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Adrian, ponded

Percent of map unit: 1 percent
Landform: Depressions on moraines, flood plains, outwash plains, lake plains, till plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave

Custom Soil Resource Report

Across-slope shape: Linear, concave
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

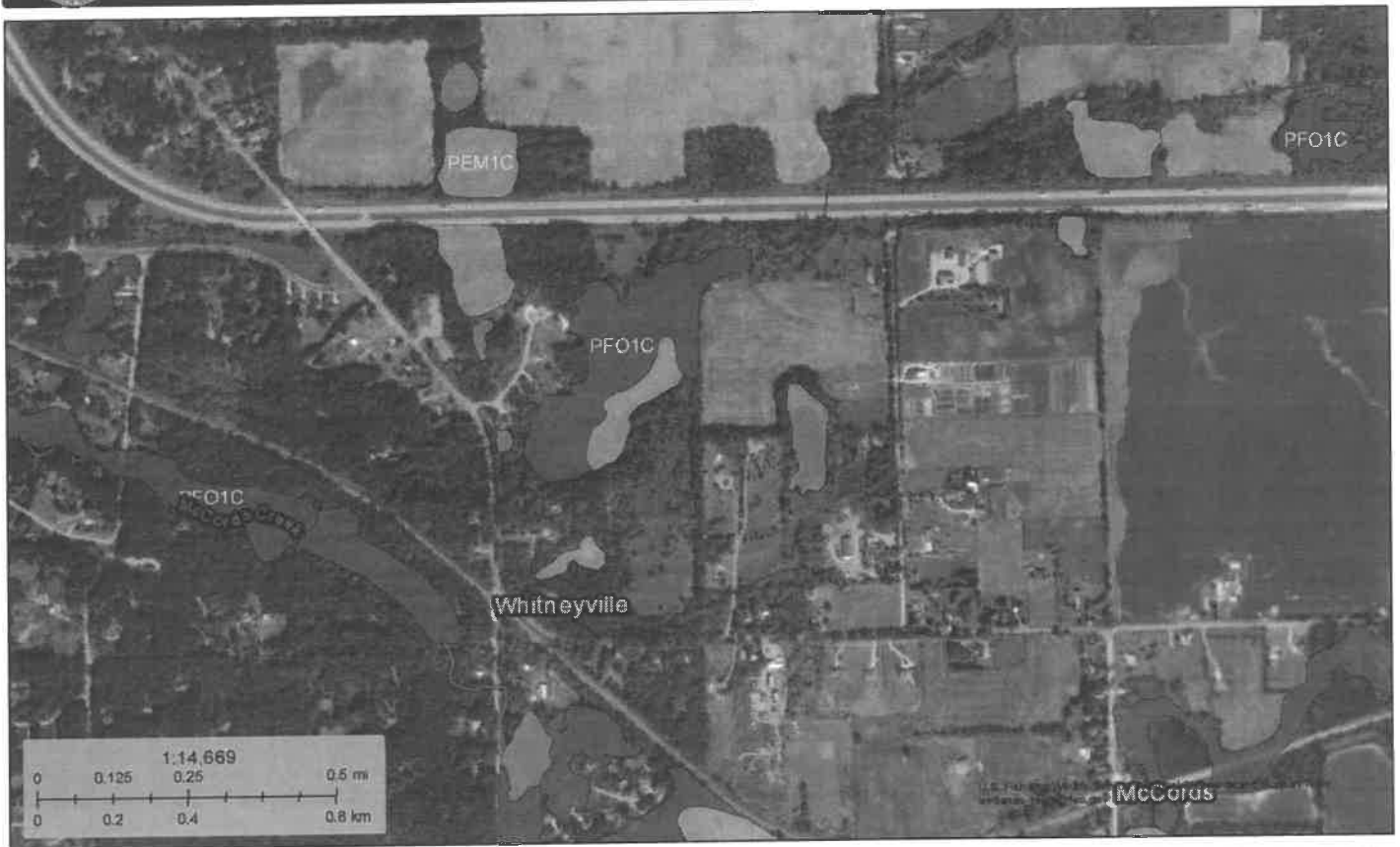
United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf










U.S. Fish and Wildlife Service
National Wetlands Inventory

Freedom Reins



July 20, 2018

Wetlands

- | | | |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland |  Lake |
|  Estuarine and Marine Wetland |  Freshwater Forested/Shrub Wetland |  Other |
| |  Freshwater Pond |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Table H - District BMP Recommendations

Drainage District	Infiltration	Extended Detention or Retention	Regional Detention	Buffer or filter strips	Sediment basin	Streambank stabilization
60th Street		✓		✓		
Alaska	✓			✓	✓	
GRFIA Northeast	✓			✓		
Cascade Road	✓		✓	✓		✓
Cascade East	✓			✓		
Cascade Southeast	✓			✓		✓
Cascade West	✓	✓	✓	✓		
Cascade Woods	✓	✓		✓		
Crestwood Hills	✓			✓		
Forest Creek	✓			✓		✓
Grand River One	✓			✓	✓	
Grand River Two	✓			✓	✓	
Burger 1	✓			✓		✓
Burger 2	✓	✓		✓		
GRFIA Northwest		✓		✓		
GRFIA Southeast	✓	✓	✓	✓		
GRFIA Southwest		✓		✓		
Hidden Hills	✓			✓		✓
Highgrove	✓	✓		✓		✓
Kendrick		✓		✓		
M-6 Interchange	✓			✓		
Maracaibo Shores				✓	✓	
Meadowbrooke		✓	✓	✓		
Middle Thornapple	✓	✓		✓	✓	

Cascade Southeast District

The Cascade Southeast District is shown in Figure CS1. The stream that drains this district has its headwaters in both Lowell Charter Township to the east and Caledonia Charter Township to the south. A bayou is located near the confluence of the stream and the Thornapple River. The bayou has many homes built along its banks. Upstream of the Thornapple Bayou Drive bridge moderate streambank erosion is evident on the outside of the meanders and in some places major sloughing (separation and sliding of bank materials due to erosion at the toe of a steep streambank) of the larger banks was observed. Most natural streams contain riffle, run, and pool sequences. A riffle is a section of the stream with shallow depths, high velocities, and coarse channel bottom materials. Riffles tend to dissipate much of the energy as water flows downstream. The section of stream upstream of Thornapple Bayou Drive contains both natural and manmade riffles (photographs CS2 and CS3). The Buttrick Avenue crossing consist of two corrugated metal pipe culverts with one partially filled with sediment (photograph CS4). This culvert is probably in use only during high flow events.

Upstream of Buttrick Avenue the stream continues meandering with erosion visible on the banks and major sloughing on the highest banks. In one location a 50-foot-high slough was noted (photograph CS5). The stream has many riffles and is fast moving. The confluence with the north branch occurs midway between Buttrick Avenue and 52nd Street. The south channel passes under both 52nd Street and Whitneyville Avenue.

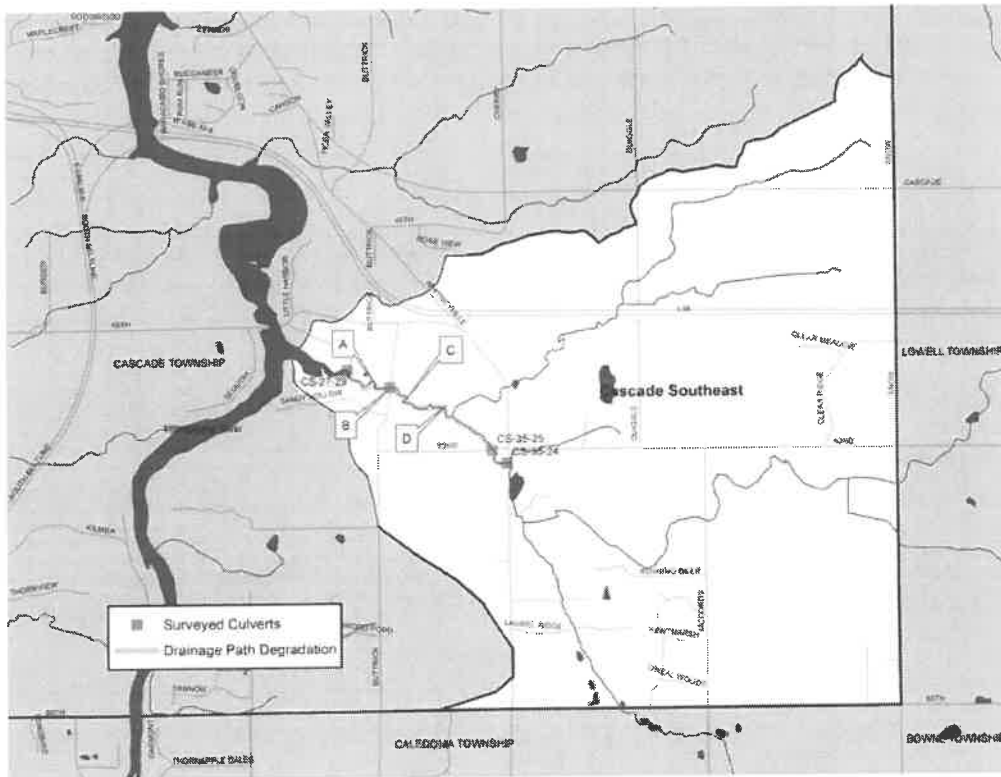


Figure CS1



Photograph CS2 (flag A, Figure CS1)



Photograph CS3 (flag C, Figure CS1)



PhotoCS4 (flag B, Figure CS1)



Photograph CS5 (flag D, Figure CS1)

Culvert Condition Report – Cascade Township

District: Cascade Southeast
Location: Whitneyville Ave.
Site Name: CS-35-24
Size/Type: 20' wide Bridge
End condition: channel

Upstream end

sediment depth: 5.5' from crown
water level: 6"
vegetation: none

Downstream end

sediment depth: 5.5' from crown
water level: 6"
vegetation: none

Comments: good

Survey Data

Road elevation [ft]: 101.90
Culvert length [ft]: 30
Slope: 0.0090

Hydrologic calculations

10-year discharge [cfs]: 140
25-year discharge [cfs]: 284
100-year discharge [cfs]: 650

Hydraulic calculations

10-year headwater elevation [ft]: 96.60
25-year headwater elevation [ft]: 97.70
100-year headwater elevation [ft]: .. 99.80

Photographs: Upstream
CS33

Downstream
CS32



Culvert Condition Report – Cascade Township

District: Cascade Southeast
Location: 52nd St.
Site Name: CS-35-25
Size/Type: 12' x 7' Twin pipe arch CMP
End condition: channel

Upstream end
sediment depth: 2"
water level: 6"
vegetation: none

Downstream end
sediment depth: 4"
water level: 6"
vegetation: none

Comments: both are conveying water

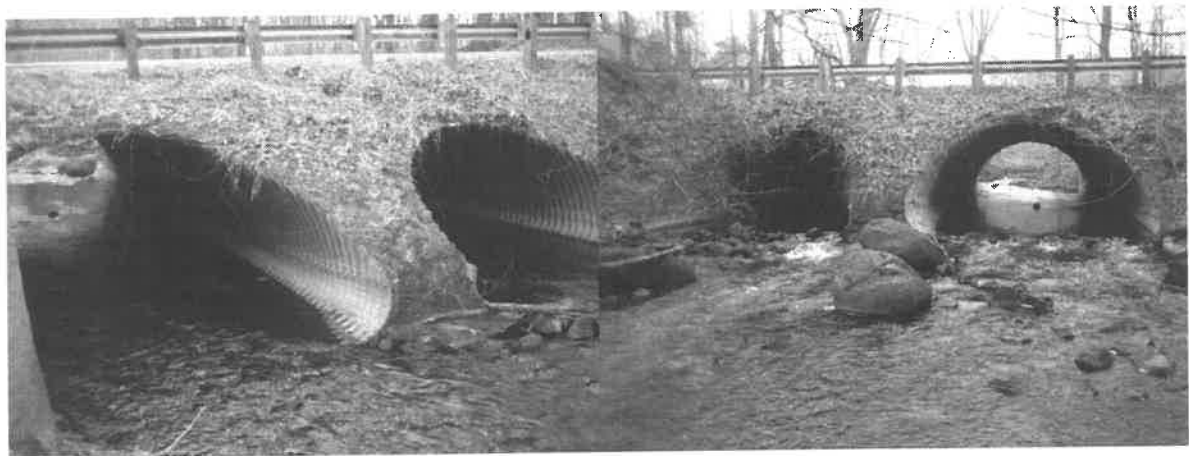
Survey Data
Road elevation [ft]: 110.43
Culvert length [ft]: 50
Slope: -0.0068

Hydrologic calculations
10-year discharge [cfs]:
25-year discharge [cfs]:
100-year discharge [cfs]:

Hydraulic calculations
10-year headwater elevation [ft]: 102.50
25-year headwater elevation [ft]: 103.50
100-year headwater elevation [ft]: .. 105.50

Photographs: Upstream
CS31

Downstream
CS30



Culvert Condition Report – Cascade Township

District: Cascade Southeast
Location: Buttrick Ave.
Site Name: CS-26-8
Size/Type: 12' x 6' Twin pipe arch CMP
End condition: channel

Upstream end
sediment depth: 1"
water level: 6"
vegetation: none

Downstream end
sediment depth: 1"
water level: 6"
vegetation: none

Comments: culvert on L (looking US) is half buried in sed. (may be used as overflow)

Survey Data
Road elevation [ft]: 103.92
Culvert length [ft]: 55
Slope: 0.0004

Hydrologic calculations
10-year discharge [cfs]: 172
25-year discharge [cfs]: 343
100-year discharge [cfs]: 793

Hydraulic calculations
10-year headwater elevation [ft]: 97.90
25-year headwater elevation [ft]: 99.50
100-year headwater elevation [ft]: .. 102.80

Photographs: Upstream
CS11



Downstream
CS10



Culvert Condition Report – Cascade Township

District: Cascade Southeast
Location: Thornapple Bayou Dr.
Site Name: CS-27-29
Size/Type: 12' x 6' Conc. Bridge
End condition: bayou

Upstream end

sediment depth: none
water level: 4' from crown
vegetation: none

Downstream end

sediment depth: none
water level: 4' from crown
vegetation: none

Comments: bridge

Survey Data

Road elevation [ft]: 101.16
Culvert length [ft]: 15
Slope: 0.0107

Hydrologic calculations

10-year discharge [cfs]: 171
25-year discharge [cfs]: 341
100-year discharge [cfs]: 788

Hydraulic calculations

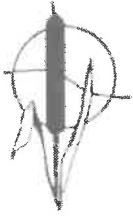
10-year headwater elevation [ft]: 96.80
25-year headwater elevation [ft]: 98.70
100-year headwater elevation [ft]: .. 101.50

Photographs: Upstream
CS2



Downstream
CS1





King & MacGregor
Environmental,
Inc.

August 1, 2016

Sent Via Email

Mr. Douglas Lee
Freedom Reins Farms, LLC.
8613 52nd St.
Ada MI 49301

Re: Wetland Determination – 52nd & Whitneyville, Cascade Township

Dear Mr. Lee:

Pursuant to your request, on July 26 and 27, 2016, a wetland determination was conducted on the above-referenced site. The intent of this report is to provide a description of the location and character of the wetland areas identified within the subject parcel(s) and an opinion as to the possible jurisdiction of the Michigan Department of Environmental Quality (MDEQ) over wetland areas identified on-site.

The methods used to conduct this wetland determination are consistent with our understanding of the procedures and general practices used by the MDEQ and the U.S. Army Corps of Engineers Wetlands Delineation Methodology. Our determination included review of in-office information including the national *Web Soil Survey* (WSS; Figure 1), *National Wetlands Inventory* mapping (Figure 2) and aerial photography.

The subject parcel (41-19-26-400-015) is approximately 44 acres in size and is located in the southwest quarter of Section 26, Cascade Township (T6N, R10W), Kent County, Michigan. Predominant land uses include forest and pasture and two tributaries to McCords Creek run through the property. The wetlands identified on-site are described below.

Wetland A

Wetland A is an emergent/scrub-shrub wetland area located on the southwestern edge of the property. The vegetation identified in this area included species such as skunk cabbage, clearweed, wild yam, reed canary grass, wood reedgrass, jewelweed, glossy buckthorn, green ash, silver maple, and box elder. The soils are described in the WSS as Houghton muck, ponded, a very poorly drained soil. The soils evaluated on-site were consistent with this description. The boundaries of this wetland were identified using flags A1 through A20.

Wetland B

Wetland B is a forested/scrub-shrub wetland area located at the south end of the property. A tributary to McCords creek runs from east to west through this wetland. The vegetation identified in this area included species such as jewelweed, reed canary grass, clearweed, skunk cabbage, wild yam, gray dogwood, highbush cranberry, box elder, and slippery elm. The soils are described in the WSS as Spinks loamy sand, a well drained soil. The soils evaluated on-site were not consistent with this description, as they were poorly drained and exhibited hydric characteristics. The boundaries of this wetland were identified using flags B1 through B61.

2520 Woodmeadow SE
Grand Rapids, MI 49546
Phone: 616/957-1231
Fax: 616/957-2198

43050 Ford Road, Suite 130
Canton, MI 48187
Phone: 734/354-0594
Fax: 734/354-0593

162 Kuivila Road
Crystal Falls, MI 49920
Phone: 906/367-0171

email: kme@king-macgregor.com

Wetland C

Wetland C is an emergent wetland area located on the southeastern edge of the property. The vegetation identified in this area included species such as clearweed, reed canary grass, white avens, jumpseed, jewelweed, and giant goldenrod. The soils are described in the WSS as Cohoctah loam, a poorly drained soil. The soils evaluated on-site were consistent with this description. The boundaries of this wetland were identified using flags C1 through C10.

Wetland D

Wetland D is an emergent/scrub-shrub/forested wetland area located on the north half of the property. A tributary to McCords creek runs northeast to southwest through this wetland. The vegetation identified in this area included species such as lake sedge, tussock sedge, narrow-leaved cattail, boneset, swamp milkweed, jewelweed, reed canary grass, clearweed, riverbank grape, gray dogwood, American elm, green ash, and silver maple. The soils are described in the WSS as Cohoctah loam and Adrian muck, both very poorly drained soils. The soils evaluated on-site were consistent with these descriptions. The boundaries of this wetland were identified using flags D1 through D102, DD1 through DD90, and E1 through E77.

Figure 3 depicts the approximate location of the wetland areas encountered on site. The attached wetland datasheets provide more specific wetland detail.

Upland Areas

The upland areas adjacent to the on-site wetlands included vegetation such as smooth brome, spotted knapweed, Virginia creeper, enchanter's nightshade, dames rocket, bush honeysuckle, autumn olive, black cherry, black walnut, red oak, white oak, American basswood, and sugar maple. There was no evidence of standing water or saturated soils in any of the upland areas.

MDEQ Jurisdiction/Regulatory Discussion

In order for the MDEQ to have regulatory authority over a wetland, the wetland must be within 500 feet of a lake, pond and/or stream, have a direct surface or ground water connection to a lake, pond and/or stream, or be greater than 5 acres in size. Wetlands A, B, and D appear to be regulated by the MDEQ due to their proximity and/or contiguousness to the tributaries to McCord Creek. Wetland C appears not to meet the criteria for MDEQ jurisdiction.

A permit must be obtained from the MDEQ prior to conducting most filling, dredging and/or draining activities or maintaining a use of a regulated wetland.

Please be advised the information provided in this report is a professional opinion. The ultimate decision on wetland boundary locations and jurisdiction thereof rests with the MDEQ and, in some cases, the Federal government. Therefore, there may be adjustments to boundaries based upon review of a regulatory agency. An agency determination can vary, depending on various factors including, but not limited to, experience of the agency representative making the determination and the season of the year. In addition, the physical characteristics of the site can change with time, depending on the weather, vegetation patterns, drainage, activities on adjacent parcels, or other events. Any of these factors can change the nature/extent of wetlands on the site. We recommend the MDEQ be requested to confirm our wetland boundaries and jurisdictional opinion. This report does not address any local ordinances that may apply to this site.

Mr. Douglas Lee
Wetland Determination – 52nd & Whitneyville, Cascade Township

August 1, 2016
Page 3

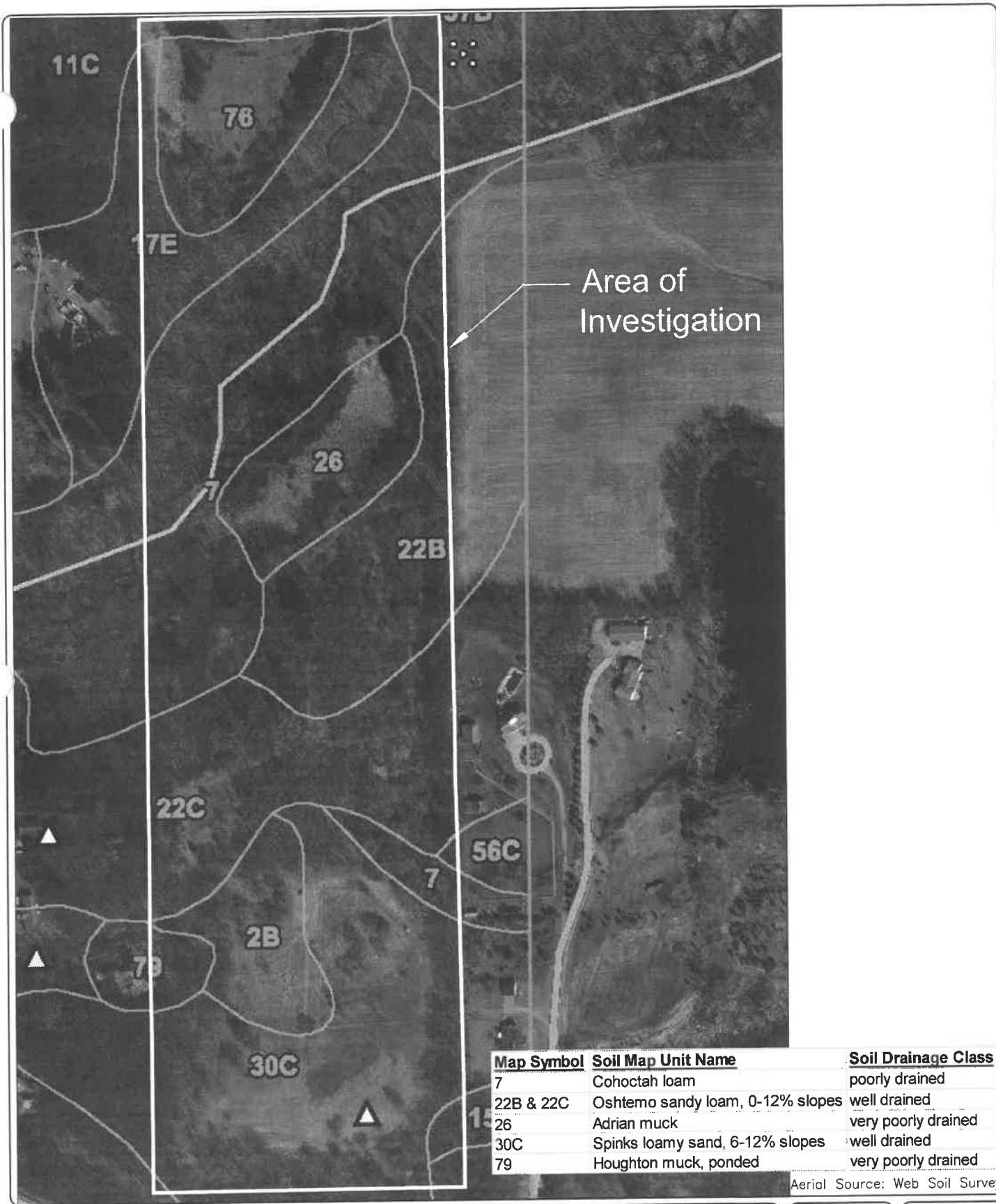
Thank you for the opportunity to provide this wetland determination. If you have any questions, please contact me at your convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "Matt MacGregor", written in a cursive style.

King & MacGregor Environmental, Inc.
Matthew J. MacGregor

Enclosures




King & MacGregor Environmental, Inc.
 2520 Woodmeadow Drive SE
 Grand Rapids, Michigan 49546
 Phone: (616) 957-1231

Wetland Determination For :
52nd & Whitneyville
 Cascade Township Kent County, Michigan

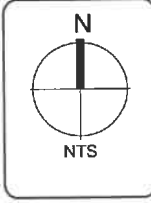
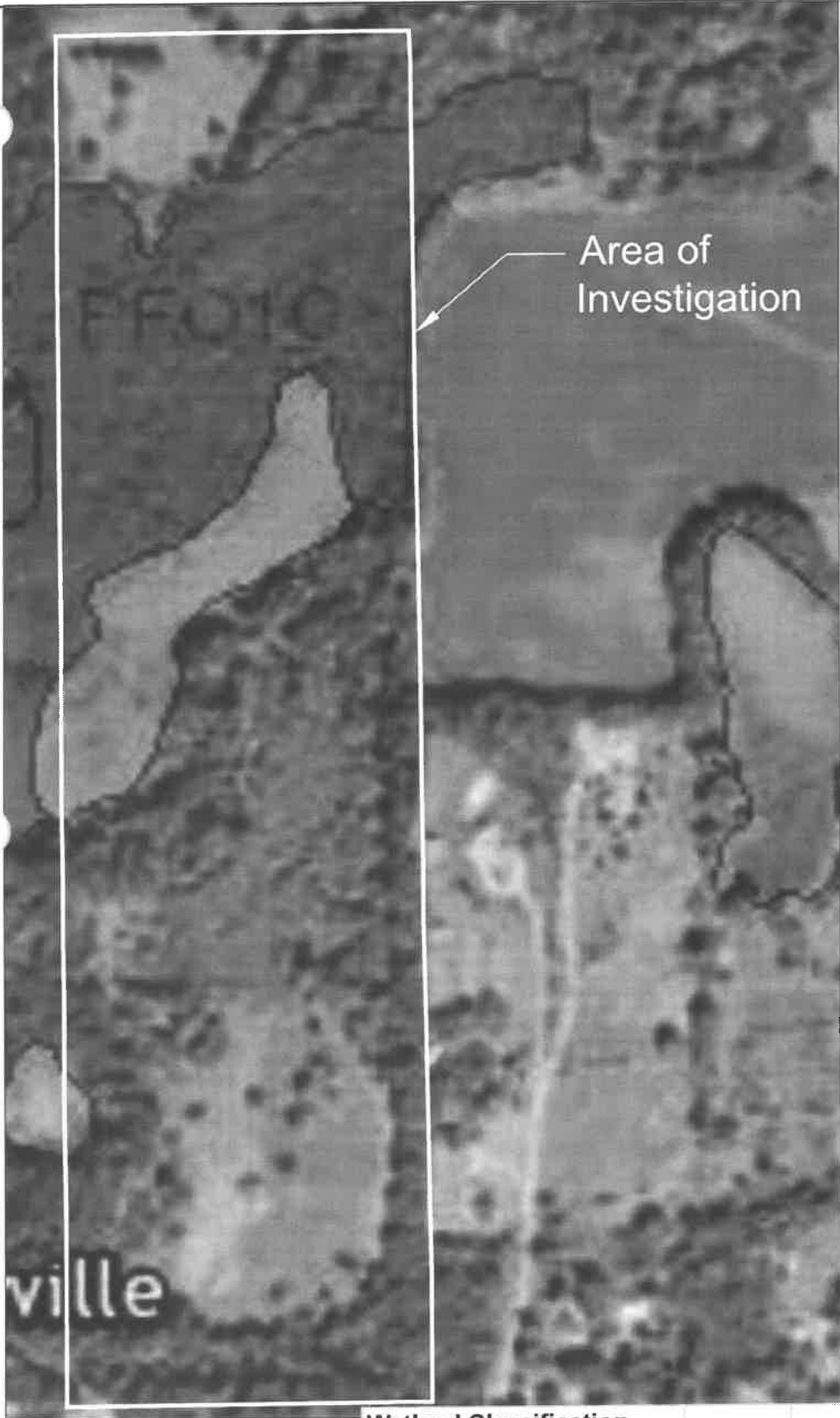










Figure
1
 Soils
 PROJECT NUMBER
 16193



Area of Investigation

Wetlands	
	Freshwater Emergent
	Freshwater Forested/Shrub
	Estuarine and Marine Deepwater
	Estuarine and Marine
	Freshwater Pond
	Lake
	Riverine
	Other

Aerial Source: National Wetland Inventory
Wetland Classification
 PFO1C Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded



King & MacGregor Environmental, Inc.
 2520 Woodmeadow Drive SE
 Grand Rapids, Michigan 49546
 Phone: (616) 957-1231

Wetland Determination For :
52nd & Whitneyville
 Cascade Township Kent County, Michigan

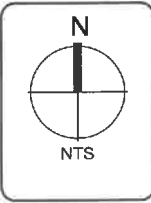
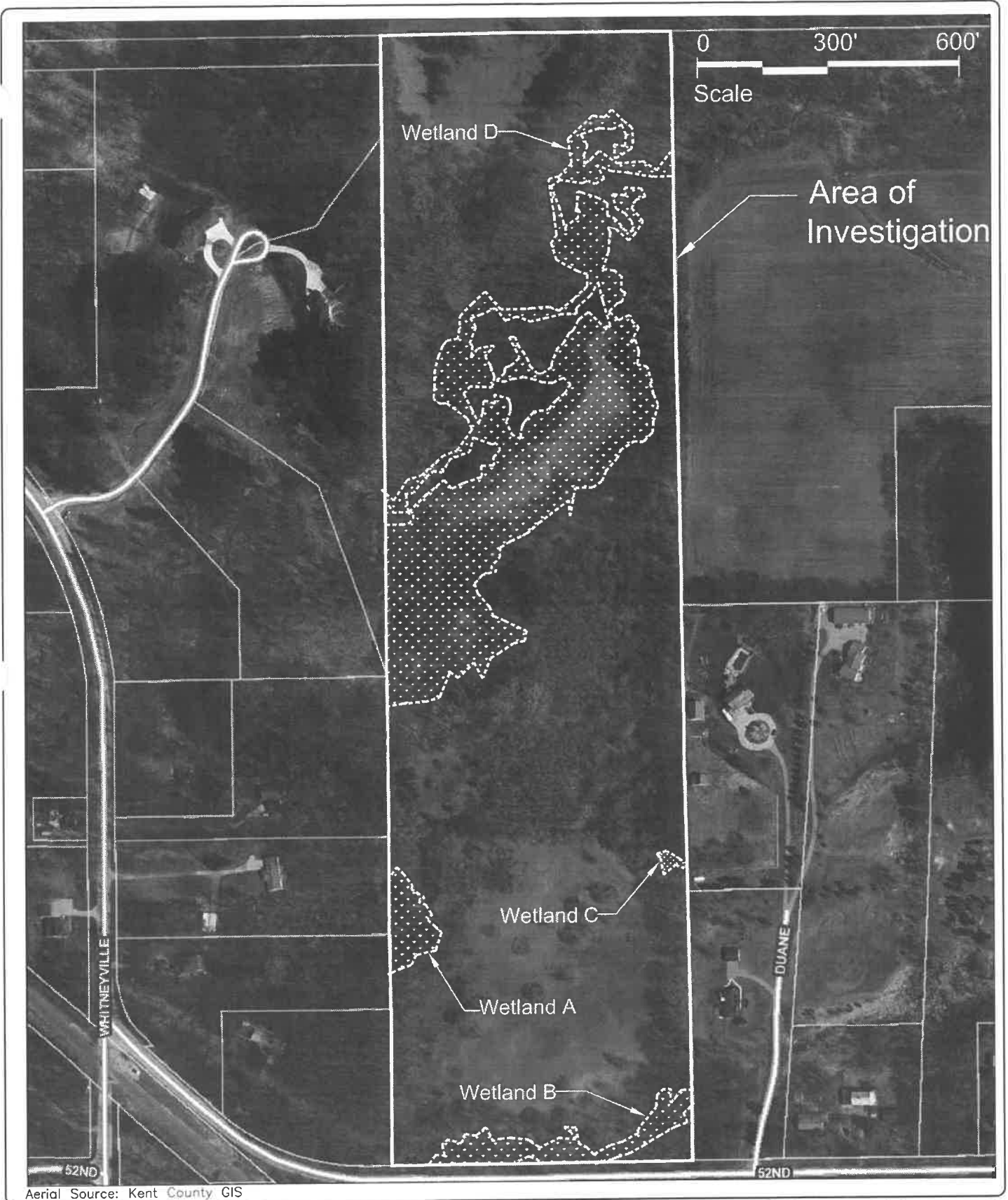


Figure
2
 National Wetland Inventory
 PROJECT NUMBER
 16193



Aerial Source: Kent County GIS



**King & MacGregor
Environmental, Inc.**
2520 Woodmeadow Drive SE
Grand Rapids, Michigan 49546
Phone: (616) 957-1231

Wetland Determination For :

52nd & Whitneyville

Cascade Township

Kent County, Michigan

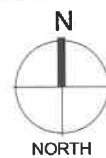


Figure
3

Wetland
Boundaries

PROJECT NUMBER
16193

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 52nd & Whitneyville City/County: Kent County Sampling Date: 7/26/2016
 Applicant/Owner: Douglas Lee State: MI Sampling Point: A wet
 Investigator(s): R.L. Phillips and C. Brown Section, Township, Range: S26 T6N R10W
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 0-1
 Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Houghton muck, ponded NWI classification: PEM/PSS
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Near A 14	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: A wet

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u> 30' </u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 5 </u> (A) Total Number of Dominant Species Across All Strata: <u> 6 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 83.3% </u> (A/B)																
1. <u> Acer saccharinum </u>	<u> 10 </u>	<u> Yes </u>	<u> FACW </u>																	
2. <u> Acer negundo </u>	<u> 10 </u>	<u> Yes </u>	<u> FAC </u>																	
3. <u> Frangula alnus </u>	<u> 5 </u>	<u> Yes </u>	<u> FAC </u>																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u> 25 </u> =Total Cover																			
Sapling/Shrub Stratum (Plot size: <u> 15' </u>)					Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u> 5 </u></td> <td>x 1 = <u> 5 </u></td> </tr> <tr> <td>FACW species <u> 100 </u></td> <td>x 2 = <u> 200 </u></td> </tr> <tr> <td>FAC species <u> 20 </u></td> <td>x 3 = <u> 60 </u></td> </tr> <tr> <td>FACU species <u> 5 </u></td> <td>x 4 = <u> 20 </u></td> </tr> <tr> <td>UPL species <u> 0 </u></td> <td>x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals: <u> 130 </u> (A)</td> <td><u> 285 </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u> 2.19 </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> 5 </u>	x 1 = <u> 5 </u>	FACW species <u> 100 </u>	x 2 = <u> 200 </u>	FAC species <u> 20 </u>	x 3 = <u> 60 </u>	FACU species <u> 5 </u>	x 4 = <u> 20 </u>	UPL species <u> 0 </u>	x 5 = <u> 0 </u>	Column Totals: <u> 130 </u> (A)	<u> 285 </u> (B)	Prevalence Index = B/A = <u> 2.19 </u>
Total % Cover of:	Multiply by:																			
OBL species <u> 5 </u>	x 1 = <u> 5 </u>																			
FACW species <u> 100 </u>	x 2 = <u> 200 </u>																			
FAC species <u> 20 </u>	x 3 = <u> 60 </u>																			
FACU species <u> 5 </u>	x 4 = <u> 20 </u>																			
UPL species <u> 0 </u>	x 5 = <u> 0 </u>																			
Column Totals: <u> 130 </u> (A)	<u> 285 </u> (B)																			
Prevalence Index = B/A = <u> 2.19 </u>																				
1. <u> Frangula alnus </u>	<u> 5 </u>	<u> Yes </u>	<u> FAC </u>																	
2. <u> Lonicera morrowii </u>	<u> 5 </u>	<u> Yes </u>	<u> FACU </u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u> 10 </u> =Total Cover																			
Herb Stratum (Plot size: <u> 1m </u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u> Phalaris arundinacea </u>	<u> 80 </u>	<u> Yes </u>	<u> FACW </u>																	
2. <u> Cinna arundinacea </u>	<u> 5 </u>	<u> No </u>	<u> FACW </u>																	
3. <u> Symplocarpus foetidus </u>	<u> 5 </u>	<u> No </u>	<u> OBL </u>																	
4. <u> Impatiens capensis </u>	<u> 5 </u>	<u> No </u>	<u> FACW </u>																	
5. <u> Dioscorea villosa </u>			<u> FAC </u>																	
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u> 95 </u> =Total Cover																			
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
1. _____																				
2. _____																				
3. _____																				
4. _____																				
	_____ =Total Cover																			
Hydrophytic Vegetation Present? Yes <u> X </u> No _____																				
Remarks: (Include photo numbers here or on a separate sheet.) 																				

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 52nd & Whitneyville City/County: Kent County Sampling Date: 7/26/2016
 Applicant/Owner: Douglas Lee State: MI Sampling Point: B wet
 Investigator(s): R.L. Phillips and C. Brown Section, Township, Range: S26 T6N R10W
 Landform (hillside, terrace, etc.): floodplain/swale Local relief (concave, convex, none): concave Slope %: 1-3
 Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Spinks loamy sand, 6 to 12 percent slopes NWI classification: PEM/PSS
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Near B54.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) <u>X</u> Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <u>X</u> Surface Soil Cracks (B6) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: B wet

	Absolute % Cover	Dominant Species?	Indicator Status																																	
Tree Stratum (Plot size: <u> 30' </u>)																																				
1. <u> Acer negundo </u>	<u> 90 </u>	<u> Yes </u>	<u> FAC </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 3 </u> (A) Total Number of Dominant Species Across All Strata: <u> 3 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 100.0% </u> (A/B)																																
2. <u> Ulmus rubra </u>	<u> 10 </u>	<u> No </u>	<u> FAC </u>																																	
3. _____																																				
4. _____																																				
5. _____																																				
6. _____																																				
7. _____																																				
	<u> 100 </u> =Total Cover																																			
Sapling/Shrub Stratum (Plot size: <u> 15' </u>)																																				
1. <u> Acer negundo </u>	<u> 20 </u>	<u> Yes </u>	<u> FAC </u>	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;"><u> 5 </u></td> <td style="text-align:right;">Multiply by:</td> <td style="text-align:center;"><u> 5 </u></td> </tr> <tr> <td>OBL species</td> <td style="text-align:center;"><u> 5 </u></td> <td style="text-align:right;">x 1 =</td> <td style="text-align:center;"><u> 5 </u></td> </tr> <tr> <td>FACW species</td> <td style="text-align:center;"><u> 90 </u></td> <td style="text-align:right;">x 2 =</td> <td style="text-align:center;"><u> 180 </u></td> </tr> <tr> <td>FAC species</td> <td style="text-align:center;"><u> 125 </u></td> <td style="text-align:right;">x 3 =</td> <td style="text-align:center;"><u> 375 </u></td> </tr> <tr> <td>FACU species</td> <td style="text-align:center;"><u> 5 </u></td> <td style="text-align:right;">x 4 =</td> <td style="text-align:center;"><u> 20 </u></td> </tr> <tr> <td>UPL species</td> <td style="text-align:center;"><u> 0 </u></td> <td style="text-align:right;">x 5 =</td> <td style="text-align:center;"><u> 0 </u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align:center;"><u> 225 </u></td> <td style="text-align:right;">(A)</td> <td style="text-align:center;"><u> 580 </u></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align:center;"><u> 2.58 </u> (B)</td> </tr> </table> Prevalence Index = B/A = <u> 2.58 </u>	Total % Cover of:	<u> 5 </u>	Multiply by:	<u> 5 </u>	OBL species	<u> 5 </u>	x 1 =	<u> 5 </u>	FACW species	<u> 90 </u>	x 2 =	<u> 180 </u>	FAC species	<u> 125 </u>	x 3 =	<u> 375 </u>	FACU species	<u> 5 </u>	x 4 =	<u> 20 </u>	UPL species	<u> 0 </u>	x 5 =	<u> 0 </u>	Column Totals:	<u> 225 </u>	(A)	<u> 580 </u>				<u> 2.58 </u> (B)
Total % Cover of:	<u> 5 </u>	Multiply by:	<u> 5 </u>																																	
OBL species	<u> 5 </u>	x 1 =	<u> 5 </u>																																	
FACW species	<u> 90 </u>	x 2 =	<u> 180 </u>																																	
FAC species	<u> 125 </u>	x 3 =	<u> 375 </u>																																	
FACU species	<u> 5 </u>	x 4 =	<u> 20 </u>																																	
UPL species	<u> 0 </u>	x 5 =	<u> 0 </u>																																	
Column Totals:	<u> 225 </u>	(A)	<u> 580 </u>																																	
			<u> 2.58 </u> (B)																																	
2. _____																																				
3. _____																																				
4. _____																																				
5. _____																																				
6. _____																																				
7. _____																																				
	<u> 20 </u> =Total Cover																																			
Herb Stratum (Plot size: <u> 1m </u>)																																				
1. <u> Pilea pumila </u>	<u> 80 </u>	<u> Yes </u>	<u> FACW </u>	Hydrophytic Vegetation Indicators: <u> 1 </u> - Rapid Test for Hydrophytic Vegetation <u> X </u> 2 - Dominance Test is >50% <u> X </u> 3 - Prevalence Index is ≤3.0 ¹ <u> 4 </u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u> Impatiens capensis </u>	<u> 10 </u>	<u> No </u>	<u> FACW </u>																																	
3. <u> Boehmeria cylindrica </u>	<u> 5 </u>	<u> No </u>	<u> OBL </u>																																	
4. <u> Persicaria virginiana </u>	<u> 5 </u>	<u> No </u>	<u> FAC </u>																																	
5. <u> Circaea canadensis </u>	<u> 5 </u>	<u> No </u>	<u> FACU </u>																																	
6. _____																																				
7. _____																																				
8. _____																																				
9. _____																																				
10. _____																																				
11. _____																																				
12. _____																																				
	<u> 105 </u> =Total Cover																																			
Woody Vine Stratum (Plot size: <u> </u>)																																				
1. _____																																				
2. _____																																				
3. _____																																				
4. _____																																				
	<u> </u> =Total Cover																																			

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 52nd & Whitneyville City/County: Kent County Sampling Date: 7/26/2016
 Applicant/Owner: Douglas Lee State: MI Sampling Point: C wet
 Investigator(s): R.L. Phillips and C. Brown Section, Township, Range: S26 T6N R10W
 Landform (hillside, terrace, etc.): swale/depression Local relief (concave, convex, none): concave Slope %: 1-3
 Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Cohoctah loam NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Near C6.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ <u>C</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: C wet

	Absolute % Cover	Dominant Species?	Indicator Status																									
Tree Stratum (Plot size: <u>30'</u>)				<p>Dominance Test worksheet:</p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)</p> <hr/> <p>Prevalence Index worksheet:</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;">Total % Cover of:</th> <th style="width:10%;"></th> <th style="width:30%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 =</td> <td><u>160</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 =</td> <td><u>30</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 =</td> <td><u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td></td> <td><u>230</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A =</td> <td><u>2.30</u></td> </tr> </tbody> </table> <hr/> <p>Hydrophytic Vegetation Indicators:</p> <p><u> </u> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input checked="" type="checkbox"/> 2 - Dominance Test is >50%</p> <p><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0¹</p> <p><u> </u> 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><u> </u> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <hr/> <p>Definitions of Vegetation Strata:</p> <p>Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p>Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.</p> <p>Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p>Woody vines – All woody vines greater than 3.28 ft in height.</p> <hr/> <p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	Total % Cover of:		Multiply by:	OBL species <u>0</u>	x 1 =	<u>0</u>	FACW species <u>80</u>	x 2 =	<u>160</u>	FAC species <u>10</u>	x 3 =	<u>30</u>	FACU species <u>10</u>	x 4 =	<u>40</u>	UPL species <u>0</u>	x 5 =	<u>0</u>	Column Totals: <u>100</u> (A)		<u>230</u> (B)	Prevalence Index = B/A =		<u>2.30</u>
Total % Cover of:		Multiply by:																										
OBL species <u>0</u>	x 1 =	<u>0</u>																										
FACW species <u>80</u>	x 2 =	<u>160</u>																										
FAC species <u>10</u>	x 3 =	<u>30</u>																										
FACU species <u>10</u>	x 4 =	<u>40</u>																										
UPL species <u>0</u>	x 5 =	<u>0</u>																										
Column Totals: <u>100</u> (A)		<u>230</u> (B)																										
Prevalence Index = B/A =		<u>2.30</u>																										
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
6. _____	_____	_____	_____																									
7. _____	_____	_____	_____																									
_____ =Total Cover																												
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
6. _____	_____	_____	_____																									
7. _____	_____	_____	_____																									
_____ =Total Cover																												
Herb Stratum (Plot size: <u>1m</u>)																												
1. <u>Phalaris arundinacea</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>																									
2. <u>Solidago gigantea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>																									
3. <u>Geum canadense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																									
4. <u>Pilea pumila</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																									
5. <u>Solidago altissima</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																									
6. <u>Arctium minus</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
9. _____	_____	_____	_____																									
10. _____	_____	_____	_____																									
11. _____	_____	_____	_____																									
12. _____	_____	_____	_____																									
_____ =Total Cover																												
Woody Vine Stratum (Plot size: _____)																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
_____ =Total Cover																												
Remarks: (Include photo numbers here or on a separate sheet.)																												

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 52nd & Whitneyville City/County: Kent County Sampling Date: 7/26/2016
 Applicant/Owner: Douglas Lee State: MI Sampling Point: D wet
 Investigator(s): R.L. Phillips and C. Brown Section, Township, Range: S26 T6N R10W
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 0-3
 Subregion (LRR or MLRA): LRR L Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Adrian muck, 0 to 1 percent slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Near D50.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required: check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>12</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: D wet

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u> 30' </u>)																				
1. <u> <i>Ulmus americana</i> </u>	<u> 20 </u>	<u> Yes </u>	<u> FACW </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 3 </u> (A) Total Number of Dominant Species Across All Strata: <u> 4 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 75.0% </u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u> 20 </u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u> 15' </u>)																				
1. <u> <i>Frangula alnus</i> </u>	<u> 15 </u>	<u> Yes </u>	<u> FAC </u>	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u> 90 </u></td> <td>x 1 = <u> 90 </u></td> </tr> <tr> <td>FACW species <u> 45 </u></td> <td>x 2 = <u> 90 </u></td> </tr> <tr> <td>FAC species <u> 15 </u></td> <td>x 3 = <u> 45 </u></td> </tr> <tr> <td>FACU species <u> 5 </u></td> <td>x 4 = <u> 20 </u></td> </tr> <tr> <td>UPL species <u> 0 </u></td> <td>x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals: <u> 155 </u> (A)</td> <td><u> 245 </u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u> 1.58 </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> 90 </u>	x 1 = <u> 90 </u>	FACW species <u> 45 </u>	x 2 = <u> 90 </u>	FAC species <u> 15 </u>	x 3 = <u> 45 </u>	FACU species <u> 5 </u>	x 4 = <u> 20 </u>	UPL species <u> 0 </u>	x 5 = <u> 0 </u>	Column Totals: <u> 155 </u> (A)	<u> 245 </u> (B)	Prevalence Index = B/A = <u> 1.58 </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> 90 </u>	x 1 = <u> 90 </u>																			
FACW species <u> 45 </u>	x 2 = <u> 90 </u>																			
FAC species <u> 15 </u>	x 3 = <u> 45 </u>																			
FACU species <u> 5 </u>	x 4 = <u> 20 </u>																			
UPL species <u> 0 </u>	x 5 = <u> 0 </u>																			
Column Totals: <u> 155 </u> (A)	<u> 245 </u> (B)																			
Prevalence Index = B/A = <u> 1.58 </u>																				
2. <u> <i>Lonicera morrowii</i> </u>	<u> 5 </u>	<u> Yes </u>	<u> FACU </u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u> 20 </u> =Total Cover																				
Herb Stratum (Plot size: <u> 1m </u>)																				
1. <u> <i>Carex lacustris</i> </u>	<u> 70 </u>	<u> Yes </u>	<u> OBL </u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u> <i>Eupatorium perfoliatum</i> </u>	<u> 20 </u>	<u> No </u>	<u> FACW </u>																	
3. <u> <i>Symphotrichum firmum</i> </u>	<u> 10 </u>	<u> No </u>	<u> OBL </u>																	
4. <u> <i>Symplocarpus foetidus</i> </u>	<u> 5 </u>	<u> No </u>	<u> OBL </u>																	
5. <u> <i>Agrostis gigantea</i> </u>	<u> 5 </u>	<u> No </u>	<u> FACW </u>																	
6. <u> <i>Scirpus atrovirens</i> </u>	<u> 5 </u>	<u> No </u>	<u> OBL </u>																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u> 115 </u> =Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.) 																				
				Hydrophytic Vegetation Present? Yes <u> X </u> No _____																

Freedom Reign Farms, LLC/8585 52nd St.

Construction Schedule

March. 2019 - Soil erosion Silt Fencing installed

March. 20, 2019 – Top Soil removed and relocated

April, 2019 – Soil redistributed to elevations

April, 2019 – Private Roadway Entrance to DEQ Spec.

April, 2019 – Retention Pond Excavated

May, 2019 – (based upon weight restrictions lifted) – Curb cuts, A1 Gravel Base hauled, roadway drainage & , Asphalt

May, 2019 – Utilities installed (Electric, Gas and Cable)

June ' 2019 Landscaping